

**Mr. Wilson Project Area**  
**Environmental Assessment**

**EA# OR110 - 01 - 30**

July 2001

Glendale Resource Area, Medford District



# **Mr. Wilson Project Area Environmental Assessment**

I. Introduction and Need for the Proposal .....	<a href="#"><u>1</u></a>
II. Affected Environment .....	<a href="#"><u>3</u></a>
III. Alternatives considered but eliminated from further analysis .....	<a href="#"><u>4</u></a>
IV. The Proposed Action and Alternatives .....	<a href="#"><u>5</u></a>
A. Objectives .....	<a href="#"><u>5</u></a>
B. Overview .....	<a href="#"><u>5</u></a>
C. Project Design Features .....	<a href="#"><u>17</u></a>
1. Project Design Features Common to All Alternatives .....	<a href="#"><u>17</u></a>
Issue 1. Fish and Aquatic Habitat .....	<a href="#"><u>17</u></a>
Issue 2. Late-successional forest habitat .....	<a href="#"><u>19</u></a>
Issue 3. Timber .....	<a href="#"><u>20</u></a>
Issue 4. Elk habitat .....	<a href="#"><u>21</u></a>
Issue 5. Recreation .....	<a href="#"><u>21</u></a>
2. Project Design Features for Alternative 1. ....	<a href="#"><u>21</u></a>
3. Project Design Features for Alternative 2. ....	<a href="#"><u>22</u></a>
4. Project Design Features for Alternative 3. ....	<a href="#"><u>23</u></a>
5. Project Design Features for Alternative 4. ....	<a href="#"><u>24</u></a>
6. Project Design Features for Alternative 5. ....	<a href="#"><u>24</u></a>
7. Project Design Features for Alternative 6 -- No Action Alternative .....	<a href="#"><u>25</u></a>
VI. Environmental Impacts .....	<a href="#"><u>26</u></a>
A. Direct and Indirect Effects .....	<a href="#"><u>26</u></a>
1. Effects on Aquatic and Riparian Habitat .....	<a href="#"><u>26</u></a>
2. Effects on Late-successional Forest Habitat .....	<a href="#"><u>28</u></a>
3. Effects on Timber Resources .....	<a href="#"><u>40</u></a>
5. Effects on Recreation .....	<a href="#"><u>43</u></a>
B. Cumulative Effects .....	<a href="#"><u>43</u></a>
VII. Monitoring .....	<a href="#"><u>46</u></a>
VIII. Agencies and Persons Consulted .....	<a href="#"><u>46</u></a>
IX. List of Interdisciplinary Preparers .....	<a href="#"><u>47</u></a>
Appendix A. Summary of seasonal operating restrictions .....	<a href="#"><u>48</u></a>
Appendix B. Literature Cited .....	<a href="#"><u>49</u></a>
Appendix C. Potential timber harvest units .....	<a href="#"><u>51</u></a>
Appendix D. Plant sites within the Mr. Wilson Project Area .....	<a href="#"><u>53</u></a>
Appendix E. Summary of Coarse Woody Material surveys .....	<a href="#"><u>55</u></a>

# **Mr. Wilson Project Area**

## **Environmental Assessment**

**EA# OR110 - 01 - 30**

### **I. Introduction and Need for the Proposal**

The Glendale Resource Area is proposing management actions to assist in meeting the land use objectives identified in the Medford District BLM Resource Management Plan (RMP) dated April 14, 1995.

The Wilson/Walker Creek project area was delineated using watershed boundaries. Two sixth-field subwatersheds comprise the project area which is the basic landscape unit used for planning the proposals and analyzing the effects. At a larger scale, the project area is located within the West Fork Cow Creek analytical watershed (also called a “fifth-field watershed”) and at an even larger scale, this area is a part of the Umpqua River drainage. The West Fork Cow Creek watershed was described and analyzed in an Ecosystem Analysis in the Glendale Resource Area, Medford District, BLM, completed in 1997. This watershed analysis documented existing conditions within the watershed, analyzed important ecological functions and relationships, and identified key issues, and inventory and monitoring needs. Site-specific objectives were developed and potential management actions were identified to meet those objectives.

An interdisciplinary (ID) team of resource specialists reviewed the current conditions within the project area in light of the larger scale context provided by the Ecosystem Analysis. A large portion of this project area is classified as General Forest Management Area (GFMA) in the Medford District RMP. One of the objectives for GFMA management in the RMP is to produce merchantable timber. Other objectives include maintaining the transportation system to meet identified needs for timber harvest, administrative access and public use, maintaining stream habitat and providing some connectivity for wildlife species. The management actions in this proposal were designed to contribute to meeting those RMP objectives for GFMA, while at the same time considering and managing other resources in the project area.

In accordance with the National Environmental Policy Act (NEPA), a set of Significant Issues for the project area was developed. This Environmental Assessment (EA) focuses on these Significant Issues, both in terms of project design features (PDFs) and in describing environmental effects.

For the Wilson/Walker Creek project area, the Significant Issues identified for this Environmental Assessment were:

1. Timber harvest and logging roads may degrade habitat for Oregon Coast (OC) coho salmon and OC steelhead trout (ESA-listed and candidate species, respectively). West Fork Cow Creek is a Tier 1 Key Watershed.
2. Timber harvest removes and fragments late-successional forest habitat for numerous terrestrial and aquatic species.
3. Protection measures for Survey and Manage species, as well as for other reasons, may have adverse impacts on the available timber supply.
4. Timber harvest and a high road density may have adverse or beneficial effects on elk habitat and elk populations in the area.
5. There may be conflicts between timber management activities and recreational use in the area, especially along the Glendale to Powers bicycle area.

This EA addresses all of these issues.

This BLM is proposing several types of management actions, including timber harvest, fuels treatments, road decommissioning, road construction and road maintenance. It is likely that there will be multiple decision records and decision rationale documents dealing with separate management actions. For instance, there may be separate decisions for road renovation, road improvements, road decommissioning and timber harvest. These actions are being analyzed in one environmental assessment because they are often related in and could occur within the same time frames. Analysis of effects is more effective if conducted all at once, rather than in separate analysis documents. The actions could be implemented under one contract, such as a major timber sale contract, or could be implemented using several smaller contracts or BLM road crew personnel.

## II. Affected Environment

The location of the Proposed Action is:

Analytical Watershed (fifth field): West Fork Cow Creek  
Project Area (sixth field watersheds): Wilson and Walker Creeks  
County: Douglas  
T 32S, R 9W, sections 3, 4, 5, 7, 8, 9, 10, 16, 18.

The project area is located in the South Umpqua River watershed between about 2,200' and 3,600'. The Wilson/Walker Creeks project area encompasses two sixth-field watersheds. All of the proposed units occur on lands designated as General Forest Management Area (GFMA) in the RMP. All proposed units would involve designated critical habitat for spotted owls. The entire project area is located within Zone B (an area spanning 10 kilometers east from the Western hemlock zone) and is considered within the range of Marbled Murrelets. Surveys have been conducted and none has been found.

This watershed is dominated by the major plant grouping Tanoak/Douglas-fir moist (Tanoak series). The portion outside the Wild Rogue Wilderness Area has been extensively altered by timber harvest, including clearcuts and partial cuts. The partial cutting was done in the 1970s when 1/3 - 2/3 of the trees in many stands were cut. The stands were not burned or planted, so the understories of most stands have become dominated by tanoak and other species of brush and hardwoods, or by mixtures of brush and conifer saplings. The overstory is generally relatively open since most of the trees removed were large dominants and co-dominants. The partial cutting extended down into what are now designated as Riparian Reserves.

The West Fork Cow Creek watershed contains 15,270 acres designated as critical habitat for the spotted owl, of which 58 percent (8,900 acres) is suitable spotted owl habitat; 22 percent (12,285 acres) is in federal reserves (wilderness areas, LSR, RNA) and 29 percent (16,251 acres) in riparian reserves (59 percent in late successional).

Fish habitat in the project area consists of West Fork Cow Creek and its tributaries Wilson, Slide and Walker creeks. These streams support the following salmonid species: Oregon Coast (OC) coho salmon, OC steelhead trout and coastal cutthroat trout. It is doubtful whether adult coho salmon (ESA Threatened) use Wilson Creek in the vicinity of any of the proposed actions because of a 12 foot high rock falls on West Fork Cow Creek near Walker Creek, about 6 miles downstream of Wilson Creek. Steelhead trout (ESA Candidate) use Wilson Creek up to a 9 foot high barrier, about 0.25 miles downstream of the closest proposed timber harvest unit. Coho and steelhead use Walker Creek within 0.25 miles from the nearest timber harvest unit.

The desired future condition for the timber harvest units is a scattered overstory of large "legacy" conifers (6-8 trees per acre) with a component of hardwoods, snags and coarse woody debris and a fully stocked second canopy of vigorous young conifers. Commercial thinning would promote growth in the short term while allowing the desired future condition to be met in the long term.

### **III. Alternatives considered but eliminated from further analysis**

In developing the proposed action, the interdisciplinary team began by looking at all the General Forest Management Area (GFMA) lands in the Wilson/Walker Creeks project area. In looking at the potential harvest units in light of the watershed analysis for the West Fork Cow Creek, the team proposed deferring harvest in most of the older stands in the western portion of the project area to maintain more of a habitat connection between the Wild Rogue Wilderness Area and the marbled murrelet reserves in the short term. It was felt that harvesting some of the smaller, more fragmented blocks of older habitat in the eastern portion of the project area would have lesser short-term adverse effects on species associated with older forests.

After preliminary analysis, several of the remaining potential units were dropped from the proposed action for a variety of reasons. These units and the rationale for not including them are summarized in Appendix C. For instance, some potential harvest units were deferred from the initial proposal to minimize potential adverse cumulative effects on small headwater basins.

Approximately 190 acres around the Cold Spring recreation site (T 32S, R 9W, sec. 16) was examined by the ID team for potential timber harvest. The ID team deferred this area from timber harvest under this proposal and recommends that it be withdrawn from the General Forest Management Area and designated as a recreation area. This area would be managed for recreational uses, including walking trails, bicycle trails, etc. The area is used by elk, and is adjacent to meadows managed for elk and other meadow species. Designating the recreation area near Cold Springs would maintain a high quality recreation experience at a recreation site which has been used for decades. This site is located along the Glendale-Powers Bicycle Area and is on a major route to the coast. Maintaining an old growth forest around near this historic site would provide users with a higher quality recreational experience than would occur if the site were logged under a typical northern GFMA regeneration harvest scheme. Such a decision to change land-use allocations is beyond the scope of this EA and would have to be accomplished through a separate process, which would involve an amendment to the RMP.

## **IV. The Proposed Action and Alternatives**

### **A. Objectives**

The ID team designed the proposed actions to meet the following objectives:

- Produce commercial timber,
- Improve growth of residual trees to increase wood production in 40-100 year old stands,
- Release the understory conifers by removing overstory trees,
- Improve stocking in old partial cut stands,
- Reduce impacts of existing roads on stream and fish habitat by maintaining the road system,
- Achieve regeneration of conifers to provide future forest products,
- Maintain larger blocks of late-successional forest habitat in the short term,
- Renovate portions of the road system, and
- Provide for recreational opportunities.

### **B. Overview**

In general, the Regeneration Harvest (RH) and Overstory Removal (OR) units would harvest timber, leaving at least 6-10 large conifers and 2 large hardwoods per acre, as well as snags and down logs. The RH units would be burned if necessary to prepare the site, and then planted. In the OR units, the intent is to retain existing young conifer reproduction rather than rely on planting to establish the next stand. In commercial thin (CT) units, the existing stand would be thinned to release the residual trees.

Following harvest, many of the units would receive site preparation treatments specified in Table 1 and in the silvicultural prescription. The regeneration harvest units would be reforested using planted nursery stock. Additional treatments, such as shade-carding, mulching, providing browse protection and controlling competing vegetation may be required to ensure adequate establishment of the next forest stand. This EA addresses activities through the time when stands are considered stocked and established.

The ID team developed alternatives during the planning for this proposal. Table 1 summarizes the major features of timber harvest under the action alternatives. All potential harvest units were field-inspected for indications of current or potential slope instability; problem areas were deleted from further consideration. Table 2 summarizes the proposed road work proposals. In addition, a No Action Alternative (Alternative 6) is described and analyzed.

**Alternative 1.** Under this alternative, timber harvest would be planned and conducted with no special provision for protecting habitats and occupied sites with Survey and Manage species. Other measures called for in the RMP would be implemented.

**Alternative 2.** Under this alternative, talus occupied by Del Norte salamanders would be protected by retaining at least 40 percent canopy closure. Areas with a relatively high population density of terrestrial Survey and Manage mollusks would be protected by retaining at least 40 percent canopy closure in RH and OR units, including a buffer up to 170 feet. Areas with only single or few locations would be buffered with 170' and retain 40 percent canopy. No site-specific protection would be given to mollusks in commercial thin units, which generally leave at least 40 percent canopy. Individual trees with red tree vole nests that are active or of unknown status would be protected and no reserve area would be established. Survey and Manage and special status plant species would be protected by retaining a 100-foot no-cut buffer around plant locations in commercial thin units, and a 200-foot buffer around sites in regeneration harvest and overstory removal units.

**Alternative 3.** Under this alternative, occupied Del Norte habitat would be protected to a greater extent than in Alternative 2. A minimum of 60-80 percent canopy closure over the talus and 40-60 percent canopy within one tree-length of the talus would be retained. Terrestrial molluscs, red tree voles and plants would be protected similarly to Alternative 2.

**Alternative 4.** This alternative would emphasize restoration and release. Only commercial thin units would be included; regeneration and overstory removal harvest units would be deferred. The primitive road on the ridge near unit 29 would be fully decommissioned. Terrestrial molluscs, red tree voles and plants would be protected similarly to Alternative 2.

**Alternative 5 - Preferred Alternative.** This alternative would protect occupied Del Norte habitat similarly to Alternative 3. Terrestrial molluscs and two bryophyte species (*Ulotrichum megalospora* and *Ptilidium californicum*) would not be protected, since the species in this area were removed from the Survey and Manage list by the Record of Decision for the Final Supplemental Environmental Impact Statement for Amendment to the Survey and Manage, Protection Buffer and Other Mitigating Measures, Standards and Guidelines (SEIS ROD). Red tree vole nests that are active or of unknown status would be protected with at least 10-acre reserves. Other plants would be protected similarly to Alternative 2.

**Alternative 6, the No Action Alternative.** Under this alternative, the management actions described under Alternatives 1 - 5 would not take place at this time. Since these lands are designated as GFMA lands in the RMP, timber harvest would likely occur on these areas in the future, but would be described in a future analysis document. Routine activities, such as road maintenance, pre-commercial thinning and other activities would continue in the area.

**Table 1. Summary of timber harvest alternatives in the Mr. Wilson Project Area.**

<b>Unit Number</b>	<b><u>Alternative 1</u></b>	<b><u>Alternative 2</u></b>	<b><u>Alternative 3</u></b>	<b><u>Alternative 4</u></b>	<b><u>Alternative 5</u> Preferred Alternative</b>	<b>Comments</b>
1	CT - Cable 8 ac 80 MBF	CT - Cable 8 ac 80 MBF	CT - Cable 8 ac 80 MBF	CT - Cable 8 ac 80 MBF	CT - Cable 7 ac 80 MBF	BGTDs Plants 100'
2	Defer - Stand already at target stocking levels 11 ac					
3A	RH - Cable SL (BR) B 19 ac 300 MBF	RH - Cable SL (BR) B 10 ac 200 MBF	RH - Cable SL (BR) B 10 ac 200 MBF	Defer	RH - Cable SL (BR) B 5 ac 110 MBF	BGTD, PTD Plants 200'
3B	OR - H SL (BR) P 36 MBF		Defer - S&M protection 3 ac			
3C	OR - H Sl (Br) P 33 ac 425 MBF	OR - H Sl (Br) P 25 ac 350 MBF	OR - H Sl (Br) P 25 ac 350 MBF	Defer	OR - H Sl (Br) P 20ac 300 MBF	DNS, BGTD, PTD RTV Plants 200'
4	Defer - stand not manageable as a harvest unit					
5A	RH - Cable B 15 ac 225MBF	RH - H Sl (Br), P 5 ac 75 MBF	RH - H Sl (Br), P 5 ac 75 MBF	Defer	Defer RTV	DNS RTV
5B	RH - Cable Sl (Br) P, B 4ac 140 MBF	RH - Cable Sl (Br) P, B 4ac 140 MBF	RH - Cable Sl (Br), B 4ac 140 MBF	Defer	RH - Cable Sl (Br), B 2 ac 70 MBF	PTD Plants

<b>Unit Number</b>	<b><u>Alternative 1</u></b>	<b><u>Alternative 2</u></b>	<b><u>Alternative 3</u></b>	<b><u>Alternative 4</u></b>	<b><u>Alternative 5 Preferred Alternative</u></b>	<b>Comments</b>
6	RH (12+TPA) - H SI (Br) P 240 MBF			Defer - S&M protection	20 ac	
7	OR - Cable SI (Br), P 17 ac 170 MBF	OR - Cable SI (Br), P 17 ac 74 MBF	OR - Cable SI (Br), P 17 ac 45 MBF	Defer	Defer Not a commercially viable unit	DNS
8	Withdraw from intensive timber harvest base					6 ac
9	Defer - regeneration is doing well without release					27 ac
10	Defer - stand is too young to harvest					10 ac
11	Defer - unit is too small to manage					7 ac
12	OR/CT Tractor/Cable SI (Br), P 16 ac-OR, 7 ac-CT 850 MBF	OR/CT Tractor/Cable SI (Br), P 16 ac-OR, 7 ac-CT 850 MBF	OR/CT Tractor/Cable SI (Br), P, B 16 ac-OR, 7 ac-CT 850 MBF	Defer	OR/CT Tractor/Cable SI (Br), P 16 ac-OR, 7 ac-CT 850 MBF	BGTDs, PTDs
13	RH - Cable SI (Br), P 3 ac 75 MBF	RH - Cable SI (Br), P 3 ac 75 MBF	RH - Cable SI (Br), P, B 3 ac 75 MBF	Defer	RH - Cable SI (Br), P 3 ac 75 MBF	BGTDs, PTDs
14	Defer - all Riparian Reserves					7 acres
15	Defer - stand is too young to harvest					5 acres

<b>Unit Number</b>	<b><u>Alternative 1</u></b>	<b><u>Alternative 2</u></b>	<b><u>Alternative 3</u></b>	<b><u>Alternative 4</u></b>	<b><u>Alternative 5 Preferred Alternative</u></b>	<b>Comments</b>
16	RH/OR - Cable B 6 ac 170 MBF	RH/OR - Cable Sl (Br), P, B 1 ac-OR, 5 ac-RH 170 MBF	RH/OR - Cable Sl (Br), B 1 ac-OR, 5 ac-RH 170 MBF	Defer	RH - Cable Sl (Br), B 5 ac 170 MBF	BGTDs
17A	RH - Cable B 11 ac 800 MBF	RH - Cable B 11 ac 800 MBF	RH - Cable SL(Br), B 11 ac 800 MBF	Defer	RH - Cable Sl(Br),B 11 ac 800 MBF	BGTD, PTD Alvi2
17B	RH - Cable B 2 ac 80 MBF			Defer		DNS
18	CT/RH - Tractor/Cable Sl (Br), P, RDR 8 ac-CT, 2 ac-RH 100 MBF	CT/RH - Tractor/Cable Sl (Br), P, RDR 8 ac-CT, 2 ac-RH 100 MBF	CT/RH - Tractor/Cable Sl (Br), P, RDR 8 ac-CT, 2 ac-RH 100 MBF	Defer	CT/RH - Tractor Sl (Br), P, RDR 4 ac-CT, 2 ac-RH 80 MBF	BGTDs, PTDs swing logs down to main road Plants - 100'
19	CT - Cable 4 ac 60 MBF	CT - H 4 ac 60 MBF	CT - H 4 ac 40 MBF	CT - H 4 ac 40 MBF	CT - H 4 ac 40 MBF	DNS
20	RH - Tractor Sl (Br), B, RDR 30 ac 2,400 MBF	RH - Tractor Sl (Br), B, RDR 29 ac 2,300 MBF	RH - Tractor Sl (Br), B, RDR 29 ac 2,300 MBF	Defer	Split into 20A and 20B	2 BGTD, 1 PTD

<b>Unit Number</b>	<b><u>Alternative 1</u></b>	<b><u>Alternative 2</u></b>	<b><u>Alternative 3</u></b>	<b><u>Alternative 4</u></b>	<b><u>Alternative 5 Preferred Alternative</u></b>	<b>Comments</b>
20A	Part of unit 20				RH - Tractor S1 (Br), B, RDR 15 ac 1,100 MBF	2 BGTD, 1 PTD 2 Plants 2 RTVs
20B	Part of unit 20				RH - Tractor S1 (Br), B, RDR 15 ac 1,100 MBF	2 BGTD, 1 PTD 2 Plants 2 RTVs
21	CT - Cable 20 ac 240 MBF	CT - Cable 19 ac 228 MBF	CT - Cable 19 ac 228 MBF	CT - Cable 19 ac 228 MBF	CT - Cable 19 ac 228 MBF	BGTD, DNS Plants -100'
22	CT - H 7 ac 75 MBF	CT - H 7 ac 75 MBF	CT - H 7 ac 75 MBF	CT - H 7 ac 75 MBF	CT - H 4 ac 50 MBF	BGTD 1 RTV tree
23	Defer - cumulative watershed impacts and uneconomical to log 35 ac					
24A	RH - Tractor S1 (Br), B, RDR 7 ac 175 MBF	RH - Tractor S1 (Br), B, RDR 7 ac 175 MBF	RH - Tractor S1 (Br), RDR 7 ac 175 MBF	Defer	RH - Tractor S1 (Br), B, RDR 6 ac 150 MBF	Plants 200'
24B	RH - Tractor B,RDR 5 ac 30 MBF		Defer			

<b>Unit Number</b>	<b><u>Alternative 1</u></b>	<b><u>Alternative 2</u></b>	<b><u>Alternative 3</u></b>	<b><u>Alternative 4</u></b>	<b><u>Alternative 5 Preferred Alternative</u></b>	<b>Comments</b>
25A	CT - H 5 ac 40 MBF	CT - H 5 ac 40 MBF	CT - H 5 ac 40 MBF	CT - H 5 ac 40 MBF	CT - H 5 ac 40 MBF	BGTDs, PTD
25B	CT - H 1 ac 8 MBF	CT - H 1 ac 8 MBF	CT - H 1 ac 8 MBF	CT - H 1 ac 8 MBF	Defer RTV	BGTDs, PTD RTV
26	Defer - mostly Riparian Reserves 33 acres					
27	CT - Cable 4 ac 48 MBF	CT - Cable 4 ac 48 MBF	CT - Cable 4 ac 48 MBF	CT - Cable 4 ac 48 MBF	Defer RTV and Plant	DNS BGTDs, PTDs RTV Plant
28	CT - Cable 4 ac 48 MBF	CT - Cable 4 ac 48 MBF	CT - Cable 4 ac 48 MBF	CT - Cable 4 ac 48 MBF	CT - Cable 4 ac 48 MBF	1 BGTD
29A	CT - Cable 7 ac 70 MBF	CT - Cable 7 ac 70 MBF	CT - Cable 7 ac 60 MBF	CT - Cable 7 ac 60 MBF	CT - Cable 7 ac 60 MBF	DNS BGTD
29B	CT - Cable 30 ac 300 MBF	CT - Cable 30 ac 300 MBF	CT - Cable 30 ac 290 MBF	CT - Cable 30 ac 290 MBF	CT - Cable 25 ac 150 MBF	BGTDs, PTD RTV Plants - 100'
29C	CT - Cable 14 ac 140 MBF	CT - Cable 14 ac 140 MBF	CT - Cable 14 ac 140 MBF	CT - Cable 14 ac 140 MBF	CT - Cable 14 ac 140 MBF	BGTDs Plants - 100'
30	Defer - trees are young, growing well 15 ac					

<b>Unit Number</b>	<b><u>Alternative 1</u></b>	<b><u>Alternative 2</u></b>	<b><u>Alternative 3</u></b>	<b><u>Alternative 4</u></b>	<b><u>Alternative 5</u> <b>Preferred Alternative</b></b>	<b>Comments</b>
31	RH - Cable B 7 ac 140 MBF	RH - Cable B 3 ac 60 MBF	RH - Cable B 3 ac 60 MBF	Defer	Defer RTV	Ptilidium cal. BGTD, PTD RTV
32	RH - Cable Sl (Br), B 14 ac 850 MBF	RH - Cable Sl (Br), P, B 13 ac 800 MBF	RH - Cable Sl (Br), P, B 13 ac 800 MBF	Defer	RH - Cable Sl (Br), B 13 ac 800 MBF	DNS BGTDs
33			Defer 58 ac			

<b>Unit Number</b>	<b><u>Alternative 1</u></b>	<b><u>Alternative 2</u></b>	<b><u>Alternative 3</u></b>	<b><u>Alternative 4</u></b>	<b><u>Alternative 5</u> <b>Preferred Alternative</b></b>	<b>Comments</b>
<b>Totals</b>						
Number of units	28	25	25	11	21	
Acres of regeneration and overstory removal	211	151	151	0	113	
Acres of commercial thinning	119	118	118	103	100	
Total acres of timber harvest	330	269	269	103	213	
Timber Volume (MBF)	8,279	7,266	7,226	1,057	6,441	

**Legend for Table 1.**

DNS = Del Norte Salamander  
BGTD = Blue-gray tail-dropper slug  
PTD = Papillose tail-dropper slug

RTV = Red tree vole

tpa = Trees per Acre  
can = canopy closure  
MR = Management Recommendation  
RR = Riparian Reserve  
MBF = thousand board feet

OR = Overstory Removal  
CT = Commercial Thin  
DM = Density Management (non-commercial)  
RH = Regeneration Harvest (generally retains 6-8 trees per acre, unless noted)

P = Hand pile and burn  
B = Broadcast Burn  
Sl(Br) = Slash brush  
TR = Tractor  
H = Helicopter

**Table 2. Summary of road construction, renovation, drainage improvement, and closing in the Mr. Wilson Project Area.**

<b>Road Number</b>	<b>Road Name</b>	<b>Length (mi)</b>	<b>Surface Type</b>	<b>Proposed Action</b>	<b>Haul Season</b>
31-9-34	Walker Cr	3.77	PRR	Renovate	4/15-11/15
31-9-35	Walker Prairie	4.70	BST	Renovate	All Year
32-7-2.0	Cow Creek Rd	11.06	BST	None	All Year
32-8-1.1	W. Fk Cow Cr	10.23	BST	None	All Year
32-8-31	Kelsey Mule	0.10	BST	None	All Year
32-9-3	Bobby Walker	2.20	PRR	Renovate	4/15-11/15
32-9-4a	Walker Cr Spur	0.73	ABC	Drainage Imp.	4/15-11/15
32-9-4b	Walker Cr Spur	0.49	ABC	Block	4/15-11/15
32-9-4.1	Walker Cr Spur	0.56	PRR	Decommission	4/15-11/15
32-9-4.2	Walker Cr Spur	0.30	PRR	Decommission	4/15-11/15
32-9-7	Wilson Cr	1.70	ASC	Renovate	4/15-11/15
32-9-7.1	Wilson Head	0.73	ABC	Renovate	4/15-11/15
32-9-7.2	Wilson Head P	1.06	ABC	Drainage Imp.	4/15-11/15
32-9-7.3	Wilson Head	0.21	ABC	Renovate	4/15-11/15
32-9-7.4	Wilson Head Quarry	0.71	ABC	Drainage Imp.	6/1-10/1
32-9-8	Slide Cr Spur	0.34	PRR	Drainage Imp.	6/1-10/1
32-9-8.1	Slide Cr Spur 1	0.10	PRR	Barricade. Decommission south half after use	6/1-10/1
32-9-8.2	Slide Cr Spur 2	0.18	PRR	Decommission	6/1-10/1
32-9-8.3	Slide Cr Spur 3	0.06	PRR	Decommission	6/1-10/1
32-9-8.4	Kelsey Slide Ridge	0.40	ABC	Renovate	4/5-11-15

Road Number	Road Name	Length (mi)	Surface Type	Proposed Action	Haul Season
32-9-10	Middle Walker Cr	3.40	ABC	Renovate	4/15-11/15
32-9-15	Cold Springs	1.40	NAT	Drainage Imp. Surface	4/15-11/15
32-9-16.1	Wallace Cr	2.35	ABC	Renovate	4/15-11/15
32-9-16.2	Slide Cr	2.73	ABC	Renovate Gate	4/15-11/15
32-9-17	Powers Rd	0.20	NAT	Renovate	6/1-10/1
Primitive Rd 18	Primitive Rd road	0.10	Nat	Decommission portion within unit 18	6/1-10/1
Primitive Rd 29	Primitive Rd road	0.60	Nat	Drainage Imp Barricade after use. Decom in Alt 4	6/1-10/1
Temp 31	Temporary Road Const. (Alts. 1, 2, 3)	0.13	Nat	Decommission after use	6/1-10/1

#### Road Summary:

All year-round BST surfaced roads	26.1	miles
Extended season rock surfaced roads	20.1	miles
Native surface roads	0.9	miles
Renovate	22.2	miles
Drainage Improvement	4.8	miles
Decommissioning existing roads	1.2	miles
Temporary spur (1)	0.1	miles

#### Definitions:

BST	Bituminous Surface Treatment
ABC	Aggregate Base Course
ASC	Aggregate Surface Course
GRR	Grid Rolled Rock
PRR	Pit Run Rock
NAT	Native Surface

## **C. Project Design Features**

Project design features (PDFs) are specific measures included in the design of the proposed action to minimize adverse impacts to the human environment. Project design features are organized based on the Significant Issues identified by the ID team and described in the introduction of this EA. The reader should also be aware that many project design features for projects in the Medford District are specified for in the RMP and may not be repeated in this EA. These include Best Management Practices (BMP) as described in Appendix D of the RMP.

If changes to the PDFs are needed during project implementation, they would be cleared through the ID team and the Field Manager, and an amended EA would be prepared if necessary, before the change is implemented.

### **1. Project Design Features Common to All Alternatives**

#### **Issue 1. Fish and Aquatic Habitat**

Riparian Reserves would be established along all streams. On intermittent and non-fishery, perennial streams the reserve width would be at least one site potential tree length (170 feet) on each side of the stream for this project area. On fish streams (unit 32), the width would be 340 feet. In this project area, on-the ground examination determined that there were no cases where unstable slopes or other factors required enlarging the Riparian Reserves to meet Aquatic Conservation Strategy objectives.

No timber harvest would be allowed within Riparian Reserves. Trees within one tree length of the riparian reserves would be directionally felled away from the reserve.

The springs in units 3 and 5 would be protected with a 100-foot no-cut buffer.

The Riparian Reserve adjacent to unit 13 would be planted to reestablish conifer riparian vegetation.

The following roads (1.2 miles) would be fully decommissioned, including removing culverts, discontinuously ripping with a winged ripper, water-barring and mulching. None of the roads crosses intermittent or perennial streams.

- 32-9-4.1

- 32-9-4.2

- 32-9-8.1

- 32-9-8.2

- 32-9-8.3

- Primitive road 18 (a portion).

Road 32-9-16.2 would be closed with a gate at the site of the proposed helicopter landing, just north of the junction with road 32-9-7. This could be accomplished by moving the nearby existing gate. The gate would remain closed year-round to prevent road damage, reduce sedimentation and reduce wildlife harassment.

A total of 4.84 miles of existing roads would have drainage improvement to reduce the potential for future damage from erosion and plugged culverts. The term “drainage improvement” includes performing normal road renovation actions, but also includes installing shallow water dips, armored with rock, below cross-drain culverts and other locations as needed, and outsloping the road template where this would reduce sediment movement. Refer to Table 2 for a list of roads that would receive these treatments.

All road renovation or drainage improvement that involves work in stream channels would be restricted to the ODFW-recommended work period of July 1-September 15.

The Wilson Head quarry, source of road rock for this project area, is located on a ridge, far from any streams; activity in the quarry would be limited to the dry season.

When replacing bottom-lay culverts (stream channels) streams would be diverted around the work site whenever reasonably feasible in order to limit movement of sediment off-site during the low flow period. The diverted stream would not be returned to the channel and allowed to flow through the project site until all in-stream work has been completed.

The portion of the Primitive road used in logging unit 18 would be decommissioned and would be barricaded following harvest. The rest of this road has become overgrown and stabilized and would not be treated under this proposal.

The temporary spur accessing Unit 31 would be built, used and decommissioned between May 15 and October 15 of the same year in the same season as logging occurs.

Decommissioning of existing roads would be done between July 1 and October 15 of the same year.

The southern half of road 32-9-8.1 would be used for continuous landings for unit 21. Following yarding, this southern portion of the road would be fully decommissioned. The northern portion of the road would not be decommissioned because it is already in a recovered and stable condition; a barricade would be installed at the southern end of the road, near road # 32-9-16.

Road renovation, maintenance (except roadside brushing), drainage improvement and log hauling would be restricted to the haul seasons described in Table 2. If the roads are deemed too wet during a designated haul season (Table 2), no hauling would be allowed until approved by the Authorized Officer. If roads are sufficiently dry outside this season, hauling may be allowed if approved by the Field Manager.

Helicopter landings, outside the road prism, would be ripped and planted with conifer seedlings after use.

Constructed landings in RH and OR units would be ripped and planted with conifers upon completion of harvest.

## **Issue 2. Late-successional forest habitat**

Heavy equipment would be washed before moving onto federal lands to remove soil and plant parts to prevent the spread of noxious weeds into the project area and to prevent the introduction of Port Orford cedar root rot.

Work activities which would remove spotted owl habitat or disturb nesting owls (e.g. tree falling, yarding, slashing, burning, road construction and renovation, or use of chain saws or other power equipment) would not take place within 1/4 mile of known spotted owl sites between March 1 and June 15. If an active spotted owl nest is located within or immediately adjacent to a unit, this restriction would be extended until September 30 or until the Glendale Resource Area biologist determines that the young have sufficiently dispersed. At this time there are no known owl sites within 1/4 mile of any proposed unit. This PDF may be waived in a particular year if nesting or reproductive success surveys conducted according to the Fish and Wildlife Service-endorsed survey guidelines reveal that spotted owls are not nesting or that no young are present that year. Waivers are valid only until March 1 of the following year. Previously known sites or activity centers are assumed occupied unless surveys indicate otherwise.

The Provincial Interagency Executive Committee (PIEC) has adopted guidelines for down (course) woody material (CWD) in accordance with recommendations of the Northwest Forest Plan (NFP). The guidelines are stratified by plant association groups, with recommended quantities of down woody material for each group. This project area is most closely associated with the “Douglas-fir Moist” plant grouping. The recommendations for this group are:

Decay Class	pcs. 6-9"	pcs 10-19"	pcs 20+	Lgth/pc	Stn. Dev.
1	1 (1)	1 (2)	0 (0)	45 ft.	(11)
2	6 (20)	6 (16)	1 (4)	31 ft.	(21)
3	8 (21)	8 (19)	2 (5)	29 ft.	(17)
4	10 (21)	5 (18)	2 (7)	32 ft.	(25)
5	2 (9)	11 (22)	1 (1)	22 ft.	(32)

Course woody material for units 17b, 20, 24A, and 24B fall within the range of the guidelines adopted by the PIEC, for the plant group that is associated with this project area (Appendix E). Units 3A, 3B, 3C, 5, 7, 12, 13, 16, 17A, 31, and 32 are deficient in coarse woody material for decay class 1. An extra overstory conifer would be retained in each of these units, to provide for approximately 170 linear feet per acre of class 1 coarse woody material.

All non-danger snags and the integrity of these snags present in all units would be protected to the greatest extent possible by avoiding damage by yarding, burning or other management practices. In addition to snags already protected, trees retained for Survey and Manage protection would continue to provide sources of CWD and snags. If it is necessary to fall these snags, they would be left to provide additional large down wood.

### **Issue 3. Timber**

Partial suspension would be required and yarding corridors would be minimized to reduce soil compaction. In commercial thin units, corridors would be at least 150 feet apart at the bottom.

Tractors would be restricted to yarding between June 15 and October 15 to avoid compacting moist soils. These dates may be extended by the Authorized Officer in dry conditions.

Cable yarding in unit 21 would occur only between June 15 and October 15 to minimize soil disturbance and compaction.

Tractor yarding would be restricted to slopes of 35 percent or less.

In tractor units (12, 18, 20 and 24), tractors would be required to use designated skid roads. Existing skid roads would be used as much as possible.

In all tractor yarding units, tractor blades would not be allowed. This provision would ensure minimal soil displacement and would help to retain the organic material on site.

Skid roads in all tractor units would be discontinuously ripped, waterbarred and planted with conifers and seeded with legumes upon completion of harvest.

In unit 3, and in all OR units, patches of conifer reproduction would be protected as much as possible.

Broadcast burning in unit 17 would be designed to protect the relatively small leave trees.

Units 5B, 16 and 32 would be hand-piled and the piles burned prior to broadcast burning to reduce fire intensity.

The fiber optic line along roads 32-9-7, 32-9-15 and 32-9-16.2 would be protected during road work and while logging units 17, 18, 19, 20, 21, 24A and 32.

The gravel stock pile area near unit 25 A and B would not be used as a helicopter landing to avoid contaminating the rock with deleterious material.

Broadcast burning would be done under spring-like conditions to minimize the loss of soil organic material and better maintain control of the fire.

In OR and CT units, the following measures would be required to minimize damage to the residual stand:

- trees would be felled toward the lead,
- log lengths would be less than 35 feet long,
- cables would be re-spoiled between corridors.

In OR units, yarding would be completed within one month of falling to minimize damage to conifer regeneration.

Slashing, as called for in Table 1, would occur within two months of completion of harvest.

In all units where broadcast burning is to be done, slashing within 10 feet of reserve trees would not be done.

In units 1, 27, 28, 29A, 29B and 29C the slash would be hand-piled within 200 feet of the road to reduce the potential of fire ignition.

#### **Issue 4. Elk habitat**

Excavated landings would be recontoured and seeded with native grasses to stabilize the soil and provide elk forage. Roads which are decommissioned would also be seeded with native grasses for elk forage.

#### **Issue 5. Recreation**

During falling and yarding, warning signs would be placed along the bicycle area routes to warn log truck drivers and recreationists of potential danger.

During falling and yarding in units 1, 27, 28, 29A, 29B and 29C, a flagger would be required on road 31-9-35 to warn drivers and avoid potential accidents.

No weekend hauling would be allowed between June 1 and September 10 to minimize conflicts with recreationists.

## **2. Project Design Features for Alternative 1.**

Under this alternative, timber harvest would be planned and conducted with no special provision for protecting habitats and occupied sites with Survey and Manage species.

Approximately 12-15 trees per acre would be retained in unit 6 to provide a partially shaded environment to promote regeneration on this relatively harsh site.

The primitive road on the ridge top near unit 29 would be used for timber harvest, then would have the drainage improved and would be barricaded.

The ridge road near unit 6 would be available for vehicle access, but would not be renovated or improved. The road would be barricaded following harvest.

### **3. Project Design Features for Alternative 2.**

The primitive road on the ridge top near unit 29 would be used for timber harvest, then would have the drainage improved and would be barricaded.

#### **Del Norte Salamanders**

Under this alternative, Del Norte salamanders would receive 40 percent canopy closure in occupied talus. Only helicopter logging would be allowed within occupied talus. Occupied talus sites would retain 40 percent canopy closure within 170 feet in RH and OR units and trees would be directionally felled away from the talus.

#### **Survey and Manage Mollusks**

Areas with a relatively high population density of terrestrial Survey and Manage mollusks would be protected by retaining at least 40 percent canopy closure in RH and OR units, including a buffer up to 170 feet, although some individual locations may not be protected. Areas with few locations would be buffered with a 170' no cut buffer. No site-specific protection would be given to mollusks in commercial thin units, which generally leave at least 40 percent canopy.

#### **Red Tree Voles**

Surveys for red tree voles have been conducted. No confirmed active nests were located. All other red tree vole nests would be managed by retaining the nest trees.

#### **Other Survey and Manage, and special status species**

Populations of special status plants, including survey and manage species, would be protected with 100-foot no-cut buffers in commercial thin units and 200-foot no-cut buffers in regeneration harvest and overstory removal units. Prescribed fire would not be planned for these buffers.

#### **4. Project Design Features for Alternative 3.**

The primitive road on the ridge top near unit 29 would be used for timber harvest, then would have the drainage improved and would be barricaded.

##### **Del Norte salamanders**

At least 60-80 percent canopy closure would be retained over occupied talus. Cable and tractor yarding would be allowed, but disturbance would be limited to no more than 15 percent of the talus patch.

Areas adjacent to occupied talus would be managed to maintain suitable microclimate conditions in the talus by retaining approximately 40 percent canopy closure within 170 feet (1 tree length) from the occupied talus.

Fire would be excluded from occupied or unsurveyed talus as much as possible to retain the surface moss and duff layer. Hand piles would be placed to avoid occupied or unsurveyed talus where possible to avoid intense burns in these areas. If necessary, these piles would be burned in January and February to reduce fire intensity.

##### **Terrestrial Mollusks**

Terrestrial mollusc surveys located 2 species of terrestrial molluscs; the blue-gray tail dropper (*Prophysaon coeruleum*) and the papillose tail dropper (*P. dubium*). These species were originally on the Survey and Manage list, but were removed from the list by the SEIS ROD. In Alternative 3, suitable habitat for populations of each species would be retained for each unit in which they occur, but not for every individual location. In OR and RH units, habitat would either be excluded from the units with a buffer up to 170 feet, or sites would be protected with a buffer up to 170 feet with 40 percent overstory canopy retention. Commercial thin units would maintain 40-50 percent overstory canopy, therefore mollusks would not receive site specific protection. Habitat selected for retention would be densely populated areas in talus habitat, populated areas on the perimeter of units, or adjacent to riparian reserves. Some individual scattered locations in portions of units would not be protected.

##### **Red Tree Voles**

Surveys for red tree voles have been conducted. No confirmed active nests were located. All other nest trees would be retained.

## **Other Survey and Manage, and special status species**

Populations of special status plants, including survey and manage species, would be protected with 100-foot no-cut buffers in commercial thin units and 200-foot no-cut buffers in regeneration harvest and overstory removal units. Prescribed fire would not be planned for these buffers.

### **5. Project Design Features for Alternative 4.**

Under this alternative, emphasis would be placed on restoration and release. Roads would be decommissioned or closed with gates or barricades; others would be treated to improve drainage and reduce the risk of major failure.

Under this alternative, the Primitive road on the ridge top near unit 29 would be fully decommissioned, rather than barricaded as called for in other alternatives.

#### **Del Norte salamanders**

Del Norte salamanders would be protected by retaining at least 40 percent canopy closure. Only helicopter logging would be allowed within occupied talus. Occupied talus sites would retain 40 percent canopy closure within 170 feet and trees would be directionally felled away from the talus.

#### **Terrestrial Mollusks**

No site-specific protection would be given to mollusks in CT units, where 40 percent canopy closure is generally maintained.

#### **Red Tree Voles**

Surveys for red tree voles have been conducted. No confirmed active nests were located, and other individual nest trees would receive no protection.

### **6. Project Design Features for Alternative 5.**

The primitive road on the ridge top near unit 29 would be used for timber harvest, then would have the drainage improved and would be barricaded.

#### **Del Norte salamanders**

At least 60-80 percent canopy closure would be retained over occupied talus. Cable and tractor yarding would be allowed, but disturbance would be limited to no more than 15 percent of the talus patch.

Areas adjacent to occupied talus would be managed to maintain suitable microclimate conditions in the talus by retaining approximately 40 percent canopy closure within 170 feet (1 tree length) from the occupied talus.

Fire would be excluded from occupied or unsurveyed talus as much as possible to retain the surface moss and duff layer. Hand piles would be placed to avoid occupied or unsurveyed talus where possible to avoid intense burns in these areas. If necessary, these piles would be burned in January and February to reduce fire intensity.

### **Mollusks**

Surveys for mollusks were conducted. Most units were occupied with blue-gray and papillose tail dropper slugs, which are no longer recognized under the Survey and Manage SEIS. They would receive no protection under this alternative.

### **Red Tree Voles**

Surveys for red tree voles have been conducted. Confirmed nests and nests assumed to be active would be protected with an approximate ten-acre no-cut buffer, which may include existing reserves (e. g. Riparian Reserves, spotted owl core areas, etc.), in all harvest units.

### **Other Survey and Manage, and special status species**

Populations of special status plants, including survey and manage species, would be protected with 100-foot no-cut buffers in commercial thin units and 200-foot no-cut buffers in regeneration harvest and overstory removal units. Prescribed fire would not be planned for these buffers.

## **7. Project Design Features for Alternative 6 -- No Action Alternative**

Under this alternative, the management actions described under Alternatives 1 - 5 would not take place at this time. This includes both the timber harvest and the road work. Since these lands are designated as GFMA lands in the RMP, timber harvest would likely occur on these areas in the future, but would be described in a future analysis document.

Other, relatively minor management actions would also continue to occur in this area. Such activities as routine road maintenance and repair would occur as funding allows. Sales of special forest products and small salvage would take place and plantations would be pre-commercially thinned and manually brushed. Other actions would also occur if they are not ground-disturbing or if they are categorically excluded from NEPA requirements. Future actions which have greater impacts would be described and analyzed in an EA or EIS.

There are no other project design features specific to this alternative.

## **VI. Environmental Impacts**

This section presents discussions of the environmental consequences which are additional to, or are site specific ones not adequately addressed in the Final Supplemental Resource Management Plan/Environmental Impact Statement BLM, November, 1994 (RMP/EIS) which would result from implementation of the proposed action. In keeping with the directives of the National Environmental Policy Act (NEPA), the discussions focus on impacts considered potentially significant. The level of detail and depth of impact/analysis are generally limited to that needed to determine whether new significant environmental effects are anticipated.

Direct, indirect and cumulative effects were considered:

- Direct effects are site-specific and result from the immediate action, such as the harvest of a timber sale unit or the construction of a particular road. Direct effects are confined to a specific area such as a timber sale unit, a particular elk range, or a spotted owl site, and can be short term or long term.
- Indirect effects occur at a different place or time than the proposed action.
- Cumulative effects are generally not site-specific and are not readily attributable to any one action. Cumulative effects are the result of past, immediate, and reasonably foreseeable actions on a larger area, such as a watershed, regardless of ownership.

### **A. Direct and Indirect Effects**

#### **1. Effects on Aquatic and Riparian Habitat**

##### **Short Term**

Implementation of Best Management Practices (Medford District RMP) and the Project Design Features presented in this EA would minimize additional stream sedimentation, largely confine impacts to the immediate area of the disturbance, and avoid adverse effects to streams and fish habitat, including federally-listed fish species. The level of sediment input to streams would not adversely affect any downstream beneficial use. It is expected that a pulse of sediment would be generated during the first autumn rains from log hauling, road renovation and road drainage improvement (including five stream culverts in non-fish habitat). Although it may briefly increase turbidity and be deposited in localized areas, it would be negligible and would not impede recovery of the streams' historic sediment regimes. None of these road-related activities would take place within 0.25 miles of OC coho salmon critical habitat. No culverts in fish habitat would be replaced.

There would be an increase of on-site soil displacement resulting from decommissioning and ripping of roads and tractor trails. These activities would not result in stream sedimentation because only one of the roads or skid roads identified for decommissioning cross, or are near stream channels (road 32-9-4.1).

Improving drainage on roads, including replacing about 5 stream culverts that are deteriorating, would increase sediment movement during the first rains of the season. This impact would be minimized by implementing PDFs on pages 15-17 of this document. No culverts in fish habitat would be replaced.

Peak flows would not measurably increase and stream channel conditions would be maintained because (a) more than 90 percent of the forested acres in each subwatershed are greater than 30 years of age (Watershed Analysis, Appendix D) and therefore hydrologically recovered from past natural or human disturbance (b) road density would not increase (c) some potential harvest units were deferred and others dispersed in order to minimize potential for increasing peak flows in small watersheds (d) drainage improvement, including outslowing and adding water dips, on five miles of roads would route more water from ditch lines on to forest soils to decrease the amount that flows directly from roadside ditches into streams (e) riparian reserves would partially buffer any increases in water yield from harvest units on stream flow (f) soil depth in harvest units is adequate to allow precipitation to percolate into soil during storm events for slow release.

Under Alternative 4, decommissioning the primitive road near unit 29 would be a more effective way to prevent long-term erosion and would be a more effective way to prevent motorized vehicle use than the barricade called for in the other alternatives. Since it is located on a ridge and not near any drainages, the effects to any streams or riparian areas would be minimal or none. In addition, it is expected that the road would eventually be reopened to facilitate future logging plans.

The direct and indirect effects of Alternative 5 would be similar to Alternative 3 except that on-site impacts would be reduced with the protection and establishment of the red tree vole reserves. This would somewhat reduce hydrologic effects by retaining existing vegetation and forgoing any change in the hydrologic regime.

Under Alternative 6, the No Action Alternative, the short-term stream sedimentation from road work would not occur, but the longer term benefits from road renovation and drainage improvement would also not occur. As a result, the overall effects of the No Action Alternative would be to allow the continued deterioration of road systems with increasing chance of failure of road prism and damage to fish bearing streams.

The compaction associated with cable yarding would not occur, but the additional benefit of ripping existing compacted skid roads would also not occur. The net result of the No Action Alternative would be a slightly higher compacted area than would be the case following the logging under the action alternatives.

Water temperatures would not increase as a result of this alternative, since no timber harvest activities are proposed within Riparian Reserves. Stream shading would not be affected. The Department of Environmental Quality has listed some streams in the watershed as water-quality limited (section 303d list). These include West Fork Cow Creek and portions of East Fork Elk Valley Creek, Elk Valley Creek and Slide Creek. None of these streams would be affected by the proposed activities.

### **Long Term**

The action alternatives would result in an increased percolation of precipitation as a result of road decommissioning and ripping of tractor trails.

Ripping old and new skid trails in tractor logging units would help restore the natural hydrologic function and result in a net gain in the production potential of the sites.

Decommissioning 1.2 miles of road would result in reducing compaction on 2.8 acres, resulting in greater infiltration, less runoff and long term productivity gains.

In the long term road drainage improvement would reduce the potential for washouts and road failure, helping to ensure protection of fish bearing streams.

In summary, although there would be localized adverse effects on small, non-fisheries streams, no habitat indicator in the National Marine Fisheries Service Matrix of Pathway Indicators (NMFS 1996) for OC coho or OC steelhead would be degraded in the short or long term in either the Wilson or Walker creek sixth field subwatersheds (ACS Consistency Analysis and Consultation Report).

## **2. Effects on Late-successional Forest Habitat**

The West Fork Cow Creek fifth-field watershed contains approximately 55,800 acres, federal ownership is approximately 29,900 acres (54 percent). Approximately 67 percent (20,100 acres) of the federal ownership is late successional habitat (approximately 80+ years old). At a smaller scale, the Walker/Wilson subwatersheds contain approximately 27,300 acres, of which approximately 10,600 acres (39 percent) is federal ownership. Approximately 48 percent (5,100 acres) of the federal ownership in the Walker/Wilson watershed is in late-successional habitat

Past timber management has fragmented late-successional habitat, and reduced contiguous late-successional blocks. The proposed management would remove mostly smaller blocks of late-successional habitat. Species such as owls and elk, which are able to disperse rapidly through a wide range of habitat, would be affected less than smaller species like salamanders, that disperse slowly and have more site-specific requirements. Riparian Reserves, which are most concentrated in the south portion of the West Fork Cow Creek watershed and in the project area

and the solid block federal ownership surrounding the project area, generally provide adequate and intact connectivity of closed canopy forest for smaller and less mobile species.

Under Alternative 1, approximately 211 acres of late-successional forest habitat would be harvested, including some previously modified habitat. The proposed project would remove less than one percent of the existing late-successional habitat in the fifth-field watershed and approximately 3.8 percent of the late-successional habitat in the subwatersheds comprising the project area. Under Alternative 2, the impacts to late-successional forest habitat would be less than Alternative 1, since approximately 151 acres would be removed. Approximately 151 acres of late-successional forest habitat would be harvested in Alternative 3, including some previously modified habitat. No late-successional forest habitat would be removed in Alternative 4. Approximately 103 acres of younger stands would be commercially thinned which would accelerate the production of more late-successional forest habitat, although in GFMA land, most stands would be cut shortly after they reach late-successional habitat. No negative effects would likely occur to late-successional habitat under this alternative, nor in Alternative 6, the No-Action Alternative.

In Alternative 5, the preferred Alternative, approximately 113 acres of late-successional forest habitat would be harvested. The removal of late-successional habitat and fragmentation of older forests would be lower than Alternatives 1, 2 and 3. The additional deferral of late-successional habitat would occur mostly with smaller or isolated fragments, but which probably serve as small connectivity blocks to species that depend on late-successional habitat.

The removal of late-successional habitat would not occur under Alternative 6, the No Action Alternative, but since these lands are designated as General Forest Management Lands in the RMP, the loss of habitat would be postponed, not eliminated.

### **Spotted Owl Habitat**

All units are currently considered suitable nesting, roosting and foraging habitat for northern spotted owls. Alternative 1 would remove a total of approximately 211 acres of suitable spotted owl habitat in the stand replacement (OR and RH) units. The commercial thin (CT) units would degrade approximately 119 acres of roosting/foraging spotted owl habitat to dispersal habitat for owls after the proposed harvest. This degraded habitat would recover to suitable habitat in approximately 20-30 years following the proposed harvest.

Alternative 2 would remove a total of approximately 151 acres of suitable spotted owl habitat and approximately 118 acres in commercial thin units would be degraded from roosting/foraging to dispersal habitat, so the impacts to spotted owl habitat would be similar but less than Alternative 1.

Alternative 3 would remove a total of approximately 151 acres of suitable spotted owl habitat and therefore have less impacts than Alternatives 1 and 2. The commercial thin (CT) units would degrade approximately 118 acres of suitable spotted owl habitat to dispersal habitat.

Only short term impacts would occur to owl habitat under Alternative 4. Approximately 103 acres of habitat suitable for roosting or foraging would be degraded to dispersal, but would regain increased suitability in 10-20 years. Negative effects would be short term, but the net effects would be positive.

Alternative 5 would remove a total of approximately 113 acres of suitable spotted owl habitat. The commercial thin (CT) units would degrade approximately 100 acres of suitable roosting owl habitat to dispersal habitat for owls after the proposed harvest.

There would be no adverse effects on spotted owl habitat under the No Action Alternative.

### **Spotted Owl Sites**

Table 3 presents a summary of the impacts to spotted owl sites within 1.3 miles of proposed timber harvest units. Three active spotted owl sites would be adversely affected by removing or degrading suitable habitat within 1.3 miles under Alternative 1. The proposed harvest would further reduce the suitable habitat within this radius below 40 percent for one site, the Wall Walker site. The remaining two sites would still remain above 40 percent. The impact to the Landslide owl site would be greatest, as all of the proposed units are within 1.3 miles of this center of activity. There would be no substantial impacts to the Bobby Creek owl site, as only Commercial Thin units are within 1.3 miles. Under Alternative 2, retaining 40 percent canopy closure for Del Norte salamanders would allow these occupied talus areas to still function as owl dispersal habitat. However, most talus areas are ½ to 10 acres, so impacts to spotted owls from changes in overstory retention is minimal.

**Table 3. Pre-harvest and post-harvest amount of suitable habitat within 1.3 miles of known activity centers for spotted owls.**

Spotted Owl Site Number /Name		Acres of Suitable Habitat w/in 1.3 miles of Activity Site					Disturbance w/in ¼ mi of Activity Center? (Yes/No)	Units Affecting Activity Site
		Pre-harvest Suitable (acres)	Suitable Removed (acres)	Degraded to Dispersal (acres)	Dispersal Removed (acres)	Post-harvest Suitable Remaining (acres)		
Landslide (2623)	Alt 1	1815	61	26	0	1754	No	05A, 06,07, 12, 13, 18, 19, 21, 22,
	Alt 2	1815	41	35	0	1774		
	Alt 3	1815	41	35	0	1774		
	Alt 4	1815	0	23	0	1815		
	Alt 5	1815	41	35	0	1774		
Wall Walker (2249)	Alt 1	1092	120	0	0	972	No	03A, 03B, 03C ,5B 06, 07
	Alt 2	1092	43	0	0	1049		
	Alt 3	1092	43	0	0	1092		
	Alt 4	1092	0	0	0	1092		
	Alt 5	1092	30	0	0	1062		
Bobby Creek (0905)	Alt 1	1801	0	22	0	1779	No	29A, 29B
	Alt 2	1801	0	22	0	1779		
	Alt 3	1801	0	22	0	1779		
	Alt 4	1801	0	22	0	1779		
	Alt 5	1801	0	20	0	1781		

### Spotted Owl Critical Habitat

All units are located within designated spotted owl critical habitat unit (CHU) #OR-67. This CHU provides an integral portion of the east-west link between the southern end of the Coast Range Province and the Klamath Mountains Province. The acreage of suitable habitat removed and degraded are the same as discussed in the spotted owl habitat section above. Alternative 1 would have the greatest impacts and Alternatives 4 and 6 the least.

Under all alternatives, the CHU would continue to function as inter-provincial dispersal for owls, as 58 percent of the CHU would still provide adequate nesting, roosting, and foraging habitat within the Wilson/Walker watershed. The ability of spotted owls to disperse across the landscape would be reduced by this alternative, but the CHU would still be able to function as intended. Based on this analysis, the proposed timber harvest would have negative impacts on habitat within the CHU, but the CHU would continue to function as intended in the Northwest Forest Plan.

## **Marbled Murrelets**

All proposed units are located in Zone B (10 kilometers east of the western hemlock zone). Alternative 1 would remove 211 acres of suitable nesting habitat for murrelets. Commercial thin units do not provide suitable nesting habitat since the stands are too young and do not contain the necessary large branch structures. Thinning on approximately 119 acres would accelerate the development of late-successional characteristics in the next few decades, but may also be harvested, since on the GFMA land.

Alternative 2 action would remove 151 acres of suitable nesting habitat for murrelets. Commercial thinning on approximately 118 acres would accelerate the development of late-successional habitat characteristics, although on GFMA land it could be harvested.

Alternative 3 action would remove 151 acres of suitable nesting habitat for murrelets compared to 211 acres in Alternative 1. Commercial thinning on approximately 118 acres would accelerate the development of late-successional characteristics, although on GFMA land it could be harvested.

Under Alternative 4, thinning on approximately 103 acres would accelerate the development of late-successional characteristics, but may also be harvested on the GFMA land.

Alternative 5 action would remove 113 acres of suitable nesting habitat for murrelets. Commercial thinning on approximately 100 acres would accelerate the development of late-successional characteristics, although on GFMA land it could be harvested.

The No Action Alternative would not have any adverse effects on marbled murrelet habitat.

Surveys done by the Siskiyou National Forest and the Medford District BLM over the past several years strongly suggest that murrelets in this part of southern Oregon do not nest inland beyond the Douglas fir/hemlock zone, which occurs about 12 miles from the coast. There have been over 500 surveys conducted with no detections in the Glendale Resource Area. As a result, the action alternatives may affect suitable, but unoccupied, murrelet habitat. The risk of directly affecting any marbled murrelets is remote.

None of the proposed alternatives are located in marbled murrelet critical habitat.

## Red Tree Voles

This species would be adversely affected by the proposed removal of occupied habitat through timber harvest. Regeneration harvest and overstory removal would remove habitat, commercial thinning would have a short-term adverse effect on voles by opening canopies, thereby restricting the voles' ability to move about the canopy. The canopy in these stands would recover in 10-20 years to the point where voles could again move between trees through the canopy. The CT units would develop into better vole habitat as a result of management practices. In the OR and RH units, habitat suitable for nest building would be removed for 25-40 years. Effects to red tree vole populations has already been minimized by selecting units that are already isolated, and leaving larger, more contiguous blocks of habitat.

Alternative 1 would remove approximately 211 acres of suitable habitat and would thin an additional 119 acres. In this alternative, the viability and persistence of retained but isolated nest trees would still be substantially reduced or eliminated, since the nests would have increased exposure to weather and predators. Dispersal to and from the sites would be restricted to ground dispersal. Isolated trees would regain suitability as the surrounding regenerating stand reaches approximately 25-30 years of age. No reserve areas would be established for red tree voles.

Under Alternative 2, 151 acres of suitable habitat would be removed. Occupied talus areas with 40 percent canopy retention would continue to function as dispersal habitat. Del Norte areas with late-successional forest would function as a combination of nesting and dispersal. Commercial thin units in general, would provide mostly dispersal and limited nesting opportunity, as tree crowns and limb diameters are usually small. Thinning canopy to 40 percent would reduce the effectiveness of the dispersal habitat in the short term, but create better habitat in 10-20 years as canopy closes and creates fuller crowns and larger limbs. No red tree vole populations are established in this alternative, so the effects of this alternative would be similar to Alternative 1.

Under Alternative 3, red tree voles would be adversely affected by both destruction of potentially undetected nest sites and removal of 151 acres of suitable habitat in the units compared to 211 acres in Alternative 1. The effects from commercial thin units (118 acres) would be similar to that of Alternative 2.

Only short-term impacts would occur in Alternative 4. Habitat suitable for dispersal and limited nesting opportunities would be degraded, but still remain suitable for dispersal. Negative effects would be short term and enhanced habitat with more stable nesting opportunities developed in 10-20 years.

Alternative 5, the Preferred Alternative, would have minimal impacts to red tree voles, compared to Alternatives 1, 2, and 3, and is similar to Alternative 4. This species would be adversely affected by the proposed action by both destruction of potentially undetected nest sites and removal of 113 acres, and modification of 100 acres of suitable habitat in the units. Red tree vole

nests that are active, or activity status is unknown, would receive habitat reserves as called for by the red tree vole management recommendations. This would allow for dispersal and colonization in the immediate areas.

There would be no adverse effects to red tree voles under Alternative 5, the No Action Alternative.

### **Del Norte Salamanders**

In timber harvest units under Alternative 1, forest canopy in OR and RH units would be reduced to below suitable levels for Del Norte salamanders and most talus or portions of talus patches would not support the salamanders until the canopy closure recovers, in approximately 30-40 years. These talus patches would likely act as temporary shelter for dispersing salamanders, but extensive mortality would occur during dry seasons. About 54 acres of occupied talus was located in the proposed harvest units, ranging in size from 1/4 acre to 15 acres. Larger quantities of better quality talus habitat exists in lower slopes below most of the project area in an near riparian reserves within the Wilson/Walker watershed. Habitat would be reduced, and salamanders would be forced to migrate to other habitat. Populations would continue to exist in the east and west portions of the watershed.

In Alternative 2, logging the regeneration harvest and overstory removal units and retaining only 40 percent canopy in helicopter-logged units, and retaining 40 percent canopy closure within the 170-foot protective zones would negatively affect salamanders in some situations. Where heavy understory and ground cover remains in some units, effects would be minimal. Where ground cover and mid/understory vegetation is sparse or does not exist, 40 percent canopy retention would not meet the 60-80 percent canopy conditions typical of most salamander sites. The reduced suitability of the habitat may result in decreased population size, or eliminate the use of some talus patches in marginal condition, until suitable canopy develops in 10-20 years in CT units, and longer in late-successional habitat where tree growth is slower.

Alternative 3 would have substantially less impacts than Alternative 1, as all known Del Norte sites would receive at least 60-80 percent canopy retention as recommended in the Management Recommendations. Some timber harvest units occupied with Del Norte salamanders would be dropped entirely from timber harvest proposals, or talus areas would be deferred from harvest and not be modified. Most unoccupied habitat areas were either tagged out of timber harvest unit boundaries or would maintain a minimum 40 percent overstory canopy. No occupied habitat areas would be isolated in RH or OR units; the habitat areas are either adjacent to riparian reserves, other maturing forest, or are in CT units retaining 40 - 50 percent overstory canopy in the remainder of the unit. Most occupied talus areas require a protective zone (buffer) on one half or less of the talus patch. Some occupied habitat areas would be yarded through, but disturbing no more than 15 percent of the occupied talus area. This may directly reduce the effectiveness of a small portion of the Del Norte habitat, but the habitat area as a whole would continue to function as suitable habitat. Approximately 56 acres of occupied habitat distributed

in 16 patches have been identified in approximately 500 forested acres including and adjacent to the proposed project units. Only one patch of less than one acre of the remaining 4 unoccupied talus acres would not retain 40 percent canopy. All occupied habitat areas except one are on NE, N, or NW aspects, and are in a mid-elevation range of 2000'-3500'. The West Fork Cow Creek Watershed Analysis reports the average rainfall as 60 to 90 inches per year. With the mesic climate, favorable aspects, the high canopy retention in occupied habitat areas, and buffer zones, microclimate changes are likely to have minimal or no negative impacts on the viability of Del Norte salamanders in the Wilson/Walker Creek Watershed.

Under Alternative 4, only short term impacts would occur. Approximately 40-50 percent canopy closure would be retained at throughout commercial thin units. Negative impacts would be minimal for 10-20 years until the canopy closes in again and subcanopy and ground vegetation develops in response to the thinning. Some occupied talus areas with significant ground cover, understory and midstory cover would have 40-60 percent functioning canopy for Del Norte salamanders.

Impacts to Del Norte salamanders would be less in Alternative 5 than Alternative 1 and 2, similar to Alternative 3. The reduction of late-successional harvesting could benefit long term dispersal of young salamanders by providing more stable microclimate areas between talus areas, and all known Del Norte sites would be protected.

There would be no adverse impacts to Del Norte salamanders under Alternative 6, the No Action Alternative.

## **Bats**

Under the action alternatives, some green trees used for roosting would be removed, but green trees for roosting are generally not the limiting factor for local bat populations. Some changes in microclimatic conditions may occur around roost trees outside the harvest units, reducing their suitability and local bat use. No caves, mine shafts, adits, or rocky outcrops were located in the proposed units. All snags would be retained as much as possible. Habitat retained for Survey and Manage species would increase tree retention and snag protection within these areas and provide roosting opportunities. Overall, the direct effects of the action alternatives on these species would be minimal. The No Action Alternative would have no effect on bats.

## **Molluscs**

The Terrestrial Mollusk Protocol version 2.0 (October 29, 1997) lists 2 species of slugs, the blue-gray tail dropper and the papillose tail dropper (*Prophysaon coeruleum*) and (*P. dubium*) and 2 species of snails, the Oregon shoulderband (*Helminthoglypta hertleini*), the Oregon megomphix (*Megomphix hemphilli*), that are known or expected to occur in the proposed project. Other Survey and Manage mollusc species may also occur, but are not expected or known to occur within the project area. Mollusc surveys and incidental mollusk sites from Del Norte surveys

shows that *P. coeruleum* and *P. dubium* are abundant and well distributed throughout the project area and inhabit even small fragments of differing age classes, when contiguous with other younger or older age classes. These two species of molluscs found in the project area are no longer considered Survey and Manage species (Final Supplemental Environmental Impact Statement for Amendment to the Survey and Manage, Protection Buffer, and Other Mitigating Measures, Standards and Guidelines 2000). Site locations varied from interior to edge, talus to non-talus, riparian and non-riparian, ridge top to bottom, natural to highly manipulated habitat, and from the lowest to highest elevation units.

Under Alternative 1, Survey and Manage molluscs would receive no protection. Under this alternative, approximately 211 acres of suitable habitat (OR/RH units) would be removed until conifer regeneration is approximately 40 years old. Approximately 119 acres of suitable habitat (CT units) would be modified but still function as suitable habitat. The majority of the Wilson/Walker subwatersheds would still be in suitable habitat (40+ years old). No dispersal barriers would be created. Removed habitat would begin functioning again in approximately 40 years, and modified habitat (CT) would regain full suitability in approximately 10 years. Survey and Manage mollusc populations would still thrive with the abundance of mid to late-successional forest in the Wilson/Walker subwatersheds.

Under Alternative 2, negative effects on molluscs would be less than Alternative 1. Canopies thinned to 40 percent in this alternative would still function as mollusk habitat. Most survey and manage sites would be excluded from harvest unit boundaries, with remaining sites protected with a no-cut 85' - 170' buffer, or with 40 percent canopy retention. All populations would remain viable. There would be a removal of 151 acres of suitable (RH and OR) habitat, compared to 211 acres in Alternative 1.

Unit-specific impacts to molluscs include:

- Units 3A, 3C, 5B, 13, 31, and 32 would have the majority of sites for each Survey and Manage mollusk species tagged out of unit boundaries and included with Riparian Reserves. The habitat supporting a total of six *P. coeruleum* and four *P. dubium* sites would be removed, likely resulting in the loss of the productivity of the individual sites.
- All of unit 7 would retain 40-60 percent canopy for Del Norte salamanders, so mollusk populations in this unit would likely remain viable.
- Both mollusk species were located in the CT portions of units 12 and 18, where 40-50 percent canopy would be retained. Additional Survey and Manage species were located in habitat immediately adjacent to both of these units in similar or younger stands, indicating more suitable habitat exists in the immediate area, and in similar young habitat in the project area in general.
- One of three *P. coeruleum* sites would be protected in unit 16, in the best habitat in the lower portion of the unit with a seep, and would be posted out of the unit. Habitat supporting the three unprotected sites in the unit would be removed, likely resulting in the loss of the productivity of the individual sites.
- The majority of both species in unit 17A would be protected with 1 tree length buffers

and 40 percent canopy retention, and more sites are located in the adjacent Riparian Reserve. Habitat supporting the one unprotected site in the unit would be removed, likely resulting in the loss of the productivity of the individual site.

-Occupied habitat for some of both mollusc species in unit 20 were posted out of unit boundaries with one tree length, into adjacent suitable habitat. Removal of habitat supporting the remaining three *P. coeruleum* and one *P. dubium* sites would likely result in the loss of the productivity of the individual sites.

Approximately 30 acres in OR/RH (units 3B, 6, 17B, 24B) would be deferred for Survey and Manage protection, and 30 additional acres posted out of OR/RH units for mollusks in 1 - 3 acre parcels. The proposed action is likely to have little or no adverse effects on populations of the located Survey and Manage mollusks.

All other proposed units are either Commercial Thins, which would retain 40-50 percent canopy, are deferred from harvest for mollusks or Del Norte salamanders, or had no Survey and Manage mollusk sites.

Under Alternative 3, Survey and Manage mollusks would receive protection according to the Management Recommendation guidelines, compared to no protection in Alternative 1. Effects would be similar to Alternative 2. Mollusks would benefit from higher canopy retention in Del Norte areas, and removal of only approximately 151 acres of suitable habitat (OR/RH units) compared to 211 acres in Alternative 1 and 151 acres in Alternative 2.

The Commercial Thinning proposed in Alternative 4 on approximately 103 acres would accelerate the development of late-successional characteristics and would retain suitable habitat conditions in the short term.

The impacts of Alternative 5 would be similar to Alternative 1, but with the removal of approximately 113 acres and short term modification of 100 acres of suitable habitat, compared to 211 and 119 acres of Alternative 1. There were no mollusks located that would require any protection as described in the Survey and Manage and Protection Buffer SEIS.

Alternative 6, the No Action Alternative, would have no impacts on mollusc species.

Mollusk surveys did not locate any habitat occupied by *M. hemphilli* or *H. hertleini*. Surveys located *P. coeruleum* in 27 of 28 survey areas, and *P. dubium* in 15 of 28 survey areas. All 15 units occupied with *P. dubium* had both *P. coeruleum* and *P. dubium*. In units with more than 2 sites of the same species, locations were well distributed. The densities of each Survey and Manage mollusk is approximately equal between CT areas, and RH/OR areas. All units, or portions of each unit, and adjacent forests at least 40 years old, were considered habitat for *P. coeruleum* and *P. dubium*. Therefore, potentially suitable habitat would be affected by timber harvest, but no known sites would be affected.

## **Northern Goshawks**

Northern goshawks are likely to utilize habitat within the proposed project area for either dispersal or nesting. Use in this area is likely to be low, as habitat is very similar to the Coast Range Province, where northern goshawk use is low. Surveys do not always locate active sites, as goshawks may be secretive. Surveys were conducted, and no responses were detected. Suitable nesting and foraging habitat would be removed in OR and RH units. Nesting pairs could be disturbed and a nest site could be removed. Acres treated for thinning would improve as goshawk habitat as the understory would be opened up. The adverse impacts to goshawks would be low, as most use is likely to be for dispersal.

## **Plants**

### **Threatened and Endangered Plants**

*Fritillaria gentneri* is listed endangered under the Endangered Species Act. Although it has been found in the Glendale Resource Area, it was not found in the planning area, and the Mr. Wilson Project Area is outside of its range. No effects to threatened or endangered plants are anticipated.

### **Special Status, and Survey and Manage Vascular Plants**

Surveys were conducted in 1998. Survey methods followed the “intuitive controlled” methods outlined in the vascular plant protocol (BLM Instruction Memorandum No. OR-99-26). One *Allotropa virgata* population was found. *Allotropa virgata* would not be specifically protected, as it has been dropped from the Survey and Manage List in the “FSEIS for Amendment to the Survey & Manage, Protection Buffer, and Other Mitigation Measures Standards and Guidelines.” It is considered abundant enough to be adequately represented within non-harvest allocations. *Bensoniella oregana*, *Astragalus umbraticus* and *Iliamna latibracteata* also occur in the planning area, but no populations were found within the proposed units. *Bensoniella oregana* is a riparian species, and populations generally fall within riparian reserves.

### **Special Status, and Survey and Manage Non-vascular Plants - Lichens, Bryophytes and Fungi**

All units were surveyed for Survey and Manage strategy 2 and protection buffer non-vascular plants in the fall of 1998 and spring of 1999, using existing protocols for lichens and bryophytes. No protocol was available for some fungi and some protection buffer lichens and bryophytes, and the area was resurveyed in the spring and fall of 2000 when protocols became available (BLM Instruction Memorandum No. OR-2000-017, and OR-2000-018).

Sites of several protected Survey and Manage fungi were found, including *Bondarzewia mesenterica*, *Cantharellus tubaeformis* (*Craterellus t.*), *Phaeocollybia californica*, *P. dissiliens*, *P. kauffmanii*, *P. olivacea*, *P. sipei*, *Plectania milleri*, and *Ramaria rubrievanescens*.

Management recommendations for these species require the maintenance of late-successional forest structure, soil conditions, and microclimate, and, for some species, the prevention of snag and stump loss through prescribed fire (Castellano and O'Dell 1997). *Bondarzewia mesenterica* and *Plectania milleri* are also on the Oregon BLM Special Status list as Tracking species.

*Gyromitra esculenta* was found; it is now a Survey and Manage category F species. As such, management of known sites is not required. *Helvella compressa* was also found in this area, but has been dropped from the Survey and Manage List in the Survey and Manage SEIS ROD.

The survey and manage moss *Buxbaumia viridis* was found in the project area. In all cases, the sites consisted of one or a few individuals scattered on very rotten (class 4-5) logs. Management recommendations (USDA-USDI 1996) suggest maintaining down logs and greater than 70 percent canopy cover, and cite a drying microclimate as a threat to this species.

*Ulota megalospora*, a moss, was found in 24 (86 percent) of 28 survey units in this project area. It is widely scattered on larger tanoak (>3 inches DBH), and can occasionally be found on canyon live oak, Douglas-fir, chinquapin, or rhododendron. The liverwort *Ptilidium californicum* grows widely scattered on down wood, the bases of Douglas-fir, and on rhododendron. Populations cover approximately 123 acres (34 percent) of the 359 acres surveyed in this project area. These two bryophytes have been dropped from the Survey and Manage List in the Survey and Manage SEIS ROD, except for *Ptilidium* where it occurs in California.

In general, no-cut buffers would be about 100 feet around plant sites. For old-growth associated species that appear to require an interior forest microclimate, buffers should be about 200 feet in units that would retain less than 40 percent canopy cover. Microclimate measurements show that interior conditions may not be found until 100 to over 790 feet from clearcuts or agricultural fields, depending on site conditions and weather, and the variable measured (Chen 1991, Rodrigues 1998). Some of the smaller microclimate differences appear to be irrelevant to biological systems, as edge effects on biological variables, such as plant regeneration and species composition, generally average around 200 to 250 feet, with a range of 50 to 450 feet, adjacent to cleared areas (Chen 1991, Rodrigues 1998, Jules 1997). Also, clearcuts are not proposed; the most intensive prescriptions would retain about 10-15 percent canopy cover, probably lessening the depth of edge effects. Thinning prescriptions retain up to 60 percent canopy. Based on the numbers in the literature, modified by consideration of the prescriptions, plant sites in regeneration cuts or similar cuts that retain less than 40 percent canopy should have 200 foot buffers, and others should be 100 feet. These are no-entry buffers, as thinning, yarding corridors or road construction would lessen the protection of microclimate and possibly disrupt mycorrhizal connections. Buffers may extend across roads, as trees across roads provide shading. Burning would generally not be done in buffers, as these plants can be killed by direct heat, and some require down woody debris as habitat.

Based on the numbers in the literature, modified by consideration of the prescriptions, the proposed buffers in all action alternatives would provide adequate microsite conditions to

maintain the population at the site. Some populations of other species which do not require protection, such as Bureau Assessment Species, may be extirpated by the proposed action alternatives. This loss would not occur in the No Action Alternative.

In addition to the buffers within treatment areas, reserved areas of late-successional habitat should provide for long-term species viability in the planning area in all alternatives because the units are relatively small in relation to the untreated areas in the watershed (see discussion of the effects on late-successional habitat above). In summary, the combination of buffers within treatment areas, along with habitat outside of treatment areas, should maintain adequate habitat conditions for all species of concern in the planning area.

### **3. Effects on Timber Resources**

Approximately 8,280 thousand board feet (MBF) of timber would be harvested in Alternative 1, the greatest harvest level of all the alternatives. There would be increased growth on residual and planted conifer seedlings in the areas (approximately 50 acres) that did not receive the extra overstory retained for Survey and Manage protection in other units. Units 3B, 6, 17B, and 24B would be harvested and would receive site preparation, conifer planting, and some increased growth release of existing conifer seedlings and saplings that are presently in the understory.

Under Alternative 2, approximately 7,266 MBF would be harvested (Table 1). Units 7, 19, 29A, 29B are the only areas that have occupied Del Norte Salamander habitat, that is not already removed from harvest units under both this alternative and Alternative 3, and therefore only these 4 units are affected by the different canopy closure retention requirements. The canopy retention levels differ by 20-40 percent in these two alternatives (60-80 percent under preferred, 40 percent under Alternative 2), but the effect is blurred by the difference in the definition of canopy height. Under Alternative 2 (40 percent canopy retained), only the overstory trees are considered in canopy closure, whereas in Alternative 3 (60-80 percent canopy retained) vegetation above chest height is included in the canopy closure. Therefore, units with heavy mid-canopy can potentially have as many overstory trees removed under Alternative 3 (60-80 percent canopy retained) as in this alternative (40 percent canopy retained). The commercial thin units (19, 29A) would likely see the largest percentage increase per acre as they have less mid-canopy vegetation to be considered as part of the canopy closure under Alternative 3. However, the large volume change in unit 7 is due to the fact that more volume per acre is removed in a regeneration harvest than a commercial thin. Units 7, 19, and 29A have much of the unit with talus so they would be the most affected and they account for approximately a 40 MBF increase in harvest volume under this alternative, compared with Alternative 3.

In Alternative 3, the retention of 60-80 percent canopy as protection measures for Del Norte Salamanders along with retention of 40-60 percent canopy cover for protection of mollusc species would result in a harvest of approximately 7,226 MBF. The retention of the extra canopy closure for Del Norte Salamander and Mollusc species in stands recommended for RH and OR would result in reduced conifer regeneration under these canopies and, in particular, reduced

growth rates on conifer seedlings and saplings. It is difficult to measure the amount of reduction as the canopy retention level is variable within these protection areas and some of the mid-canopy includes conifer saplings. There would also be some growth on the extra residual overstory trees retained in the protection areas to offset loss in seedling and sapling growth. However, it is likely that shrubs would continue to dominate the understory in these areas where extra overstory levels are retained. The overall affect would likely be a reduction in conifer growth in these overstory retention areas.

Specifically, units 3A, 3C, 5, 7, 13, 17A, 19, 20, 27, 29A, 29B, 31, and 32 would have reduced timber harvest, and reduced growth rates on residual conifer seedlings and saplings. Units 27, 29A, 29B are planned for commercial thin and a small reduction of growth would occur on the residual overstory trees in the mollusc and salamander protection areas, due to no thinning or lighter thinning in these portions of the units. No timber harvest would occur in units 3B, 6, 17B, and 24B. There would be reduced growth on conifer regeneration in these units, however due to no harvest of the overstory this would be offset, to some extent, by growth on existing overstory conifers that would not be removed.

Alternative 4 would produce the smallest volume of commercial timber of the action alternatives, resulting in a timber harvest of 1,057 MBF. There would be no release of existing conifer saplings and seedlings within the proposed regeneration harvest units and overstory removal units. The areas that have scattered overstory trees and light conifer regeneration (units 3A, 5A, 5B, 13, 16, 24A) would continue to have overall reduced conifer stocking levels and continued shrub growth.

The timber harvest in Alternative 5 would be similar to Alternative 3, resulting in 6,441 MBF compared with 7,226 MBF in Alternative 3. The major difference between the two alternatives is a slightly higher level of protection for red tree voles and some plant species. The retention of the extra canopy closure for Del Norte Salamander and Mollusc species in stands recommended for RH and OR would result in reduced conifer regeneration under these canopies and, in particular, reduced growth rates on conifer seedlings and saplings. It is difficult to measure the amount of reduction as the canopy retention level is variable within these protection areas and some of the mid-canopy includes conifer saplings. There would also be some growth on the extra residual overstory trees retained in the protection areas to offset loss in seedling and sapling growth. However, it is likely that shrubs would continue to dominate the understory in these areas where extra overstory levels are retained. The overall affect would likely be a reduction in conifer growth in these overstory retention areas.

Specifically, units 3A, 3C, 5, 7, 13, 17A, 19, 20, 27, 29A, 29B, 31, and 32 would have reduced timber harvest, and reduced growth rates on residual conifer seedlings and saplings. Units 27, 29A, 29B are planned for commercial thin and a small reduction of growth would occur on the residual overstory trees in the mollusc and salamander protection areas, due to no thinning or lighter thinning in these portions of the units. No timber harvest would occur in units 3B, 6, 17B, and 24B. There would be reduced growth on conifer regeneration in these units, however

due to no harvest of the overstory this would be offset, to some extent, by growth on existing overstory conifers that would not be removed.

The stands which have been partial cut in the past and would be harvested and re-planted under the action alternatives, would remain in an understocked condition for the next several decades. It is likely that conifers would eventually out-compete the brush and hardwoods in these stands, but it would take considerably longer than if the action alternatives were implemented.

#### **4. Effects on Elk Habitat**

The regeneration and overstory removal harvest units would improve forage conditions for elk for approximately 10 - 15 years, but would remove hiding, thermal and optimal cover. In this watershed hiding and thermal cover are not limiting populations because of the extensive acreage of plantations 30-50 years old. The loss of optimal cover would be an adverse impact, but it would be compensated by the increase in forage quantity and quality, which had decreased on public lands in recent years with the reduction of regeneration harvests. About 48 percent of the Wilson/Walker subwatersheds is in late-successional habitat. The solid block BLM ownership in the project area would continue to provide generally suitable elk habitat. Most of the units selected in late-successional habitat are smaller, fragmented blocks, which would minimize adverse impacts to optimal elk cover. Decommissioning 1.2 miles of roads would also benefit elk by reducing harassment, poaching and disturbance. The net effect of the proposed action alternatives would be to improve elk forage habitat in the project area in the short term (1-15 years) and reduce the more plentiful late-successional habitat in the long term. Under the No Action Alternative elk forage would continue to generally be limited to private lands where recent logging has occurred; the creation of forage areas with RH and OR harvesting would not occur. However, this alternative would also retain optimal cover for elk in several of the older units. The roads to be closed under the proposed action would remain open, allowing for increased vulnerability from hunting, poaching and disturbance.

#### **5. Effects on Recreation**

The Walker Prairie, Kelsey Mule, Bobby Access, West Fork Cow Creek and Dutch Henry roads are all major paved access roads in this area. These roads are frequently used by dispersed recreationists for hunting, driving and camping in this area. They are also used by people as a back-road route between the interior valleys and the coast. With the exception of the Bobby Access road, these paved roads have been designated as the Glendale to Powers Bicycle Area. There is a potential for conflict in that all these roads, with the exception of the Dutch Henry road, would likely be used for hauling logs. The project design features would help minimize the potential for dangerous encounters and collisions, but the possibility would remain. The potential for conflicts between log hauling and cyclists and other recreational drivers would be substantially lower in Alternative 4 than the alternatives, since the number of log trucks would be approximately 80 percent lower than under the other action alternatives.

Other conflicts with recreational users would be transitory and minimal since the area has already been extensively logged and is only lightly used for recreation. The relatively small amount of road closures and decommissioning would not greatly affect recreational access.

Conflicts would not occur under Alternative 6, the No Action Alternative.

## **Other Effects**

Some of the proposed road treatments have the potential for damaging the fiber optic cable buried in the road way. The greatest potential would occur where culverts are to be replaced. If this cable were broken, communications would potentially be disrupted for thousands of users. Costs could run as high as \$2,000,000 per minute of interrupted service. Normal contract inspection and precautionary measures would minimize the risk of that occurring.

## **B. Cumulative Effects**

Many of the cumulative effects associated with this watershed have been addressed in the Watershed Analysis for the West Fork Cow Creek watershed located in the Medford District BLM office, as well as in the Medford District RMP/EIS. Both documents are available on the internet Medford District web site <http://www.or.blm.gov/Medford/>. More site specific effects on resources in the Mr. Wilson Project Area are discussed here.

Other recent and future management actions in the watershed, which may affect cumulative effect analysis include:

- the Key Elk timber sale - sold sale in FY 1998 but unawarded
- replacement of Twin Culverts to promote fish passage in 1997 and 1998
- road improvement and drainage improvement on the Lower Walker Creek road in 1997.
- planned replacement of East Fork Elk Valley Creek culvert in FY 2001 to remove a barrier to fish passage,
- Bear Pen timber sale - planned for sale in FY 2002
- Willy Slide timber sale - planned for sale in FY 2003
- extensive regeneration timber harvest on private lands.

Recent stream surveys in West Fork Cow Creek indicate fish habitat has been adversely affected by the loss of large wood in streams, an increase in sediment levels and an increase in water temperature from the loss of stream shading. Aquatic habitat quality is not expected to improve substantially in the West Fork Cow Creek watershed in the near future. Forest practices (e.g. road construction and maintenance, tractor logging and less riparian protection than on federal lands) on private lands would continue to counter the beneficial effects generated by Best Management Practices (BMPs), PDFs and maturing Riparian Reserves on federally-managed lands.

Approximately 100-300 acres of forest land would be altered in vegetation size, density and species composition. This constitutes less than 0.05 percent change over the West Fork Cow Creek watershed. Any changes in the hydrologic regime would not be detectable.

Decommissioning of 1.3 miles of road, although having a reduction within a small basin, would not substantially reduce the road density within the watershed. Drainage improvement and road maintenance would reduce sedimentation and failure of road prisms but is not likely to be detectable at the watershed scale. Riparian zones throughout the basin are expected to remain unchanged since no activities are planned within the riparian reserves.

Since West Fork Cow Creek is a Tier 1 Key Watershed as described in the Northwest Forest Plan, the project must be consistent with the Standards and Guidelines for Key watersheds. These guides require a reduction in existing system and non-system road mileage. All alternatives for this project provide for a net reduction in road miles, thus meeting the Key Watershed requirement. All watershed and habitat indicators in the National Marine Fisheries Service Matrix of Pathway Indicators Checklist would be maintained in the long term at the fifth-field watershed scale (West Fork Cow Creek). This project is consistent with ACS objectives (ACS Consistency Analysis) and with standards and guidelines of the LRMP/RMP Biological Opinion (March 18, 1997).

When the effects of the proposed action are added to the environmental baseline and cumulative effects elsewhere in the fifth-field watershed, it is concluded that there would be no substantial adverse effects on OC coho salmon and its Critical Habitat, to OC steelhead or to Essential Fish Habitat (Magnuson-Stevens Act) for coho salmon.

The patchy distribution and low dispersal capability of species such as Del Norte salamanders (Survey and Manage Amphibian Subgroup 1995), red tree voles (Huff et al. 1992) and mollusks within forest habitats leave these low-mobility species vulnerable to cumulative effects of timber harvest within a watershed. The cumulative effects of timber harvest on both public and private lands within the Wilson/Walker Creeks project area may lead to substantially reduced or locally extirpated populations within the eastern portion of the project area. Because of the time frames needed for suitable habitat conditions to recover, combined with the low dispersal capability of these species, their dispersal and colonization within the eastern portion of this project area watershed would be negatively affected for at least several decades. Reserves, connectivity blocks, RNA's, riparian reserves and deferrals would be relied upon to be the main source and viability of species that rely completely upon late-successional habitat.

The West Fork Cow Creek fifth-field watershed (55,843 acres) contains approximately 20,120 acres of late-successional habitat on public ownership. The proposed timber harvest would remove approximately 113 acres of this habitat, leaving 36 percent (20,007 acres) of the watershed on public ownership in late-successional forest condition. This represents 67 percent of the federal forest lands in the area, above the minimum 15 percent called for in the RMP. Much of this habitat is concentrated in the Bobby Creek Research Natural Area (RNA), although scattered sections of late-successional habitat also occur in the southeastern portion of the

watershed (Bear Creek) and in the marbled murrelet reserves in the western portion of the watershed. These sections are interspersed with private lands, which have been extensively harvested, and provide only corner-to-corner connectivity of late-successional habitat across the fifth-field watershed.

The ID team deliberately selected proposed units that are relatively small, isolated patches located primarily in the eastern portion of the Wilson/Walker Creeks project area (sixth-field watersheds). The ID team used this strategy to avoid disturbing the relatively large areas of habitat in the western portion, where the majority of the late-successional habitat in the project area exists. Late-successional connectivity across this landscape is very poor, as it has been greatly reduced by previous timber harvesting on both public and private lands. Most late-successional habitat connectivity is corner to corner on public ownership, and most of the larger blocks are on public ownership. The landscape would continue to be fragmented as timber harvest continues in the future on these matrix lands.

As timber harvest continues in the West Fork Cow Creek watershed on public and private lands, late-successional habitat would generally be reduced to Riparian Reserves, except for the Bobby Creek RNA, marbled murrelet reserves, and scattered owl core areas. The Key Elk, Mr. Wilson, and future Bear Pen and Willy Slide timber sales, would remove or modify up to approximately 1,000 acres of late-successional habitat. Several large blocks greater than 300 acres, functioning as corner to corner contiguous habitat with other blocks, are likely to be substantially reduced, and fragmented. The remaining small isolated habitat blocks in some sections are likely to be harvested, removing the last late-successional blocks in some sections.

Within the next ten years, approximately 860 acres on federal ownership in the 70-80 year old age class will be entering the late-successional habitat class, and will continue to function for T&E and S&M species, as well as other wildlife, but will likely eventually be harvested.

Species with high mobility, such as northern spotted owls, would likely still be able to disperse across the landscape between LSRs and the Bobby Creek RNA. The dispersal capability of species with low mobility, such as Del Norte salamanders, red tree voles, and mollusks, would be substantially reduced across this fragmented watershed for several decades, until closed canopy conditions develop in regenerating units. As fragmentation continues, isolated, resident populations of these low mobility species would likely be concentrated within the remnant late-successional habitat blocks (Bobby Creek RNA and marbled murrelet reserves) and riparian reserves, and in small areas deferred from harvest or managed for S&M species in recent timber sales within the West Fork Cow Creek watershed.

Through continual timber management, there would be a general decline in mature hardwood abundance, and therefore also tree species richness. Species which may depend primarily or exclusively on hardwoods would most likely also decline.

## **VII. Monitoring**

Activities in this project area would be subject to the standard monitoring called for in the RMP. In addition, the following specific monitoring action would be taken:

1. The effectiveness of drainage improvement measures would be monitored following road work.
2. Units 5A and 7 (OR/RH) and units 27 and 28A (CT) would be monitored for Del Norte salamanders and terrestrial mollusks in the second and third year post-harvest, using established survey protocol methods.

## **VIII. Agencies and Persons Consulted**

Landowners within 1/4 mile of the proposed action have been notified that this management action is being considered and asking for their opinions, concerns and suggestions.

A legal advertisement will be placed in local newspapers to announce to the public that the Glendale Resource Area is requesting public comments on the proposed management action. In addition, notification of this proposal will be sent to the Oregon Department of Fish and Wildlife, the Oregon Dept. of Forestry, county commissioners for the affected county, several environmental groups, and representatives of the timber industry to request their comments. These announcements will be made following completion of this environmental assessment and before a decision is made.

All public input was considered by the ID team in developing the proposals and analyzing the environmental effects of this action. Changes in the preliminary plan as well as the proposed project design features may be based, in part, on information received from the public. The Field Manager will also consider all input before making a final decision concerning this proposal.

## IX. List of Interdisciplinary Preparers

<u>Name</u>	<u>Title</u>	<u>Primary Responsibility</u>
Sarah DeRosear	Wildlife Biologist	Wildlife, T/E Animals, Survey & Manage
Terrie Veliotis	Civil Engineer Tech.	Roads, quarries
Loren Wittenberg	Hydrologist	Soils, Watershed, Riparian
David Peters	Forester	Logging systems, layout, contract prep.
Doug Stewart	Forester	Silviculture, vegetation, site preparation
Randy Bryan	Civil Engineer Tech.	Roads, quarries
Marlin Pose	Wildlife Biologist	Wildlife, T/E Animals, Survey & Manage
Douglas Goldenberg	Botanist	Vegetation, T/E Plants, Survey and Manage

Reviewed By:

Roger Schreiner

7-3-01

Glendale RA Ecosystem Planner  
for format and adequacy

Date

William L. Boody

7-3-01

For Lynda L. Boody  
Field Manager, Glendale Resource Area  
Medford District, BLM

Date

**Appendix A. Summary of seasonal operating restrictions - Mr. Wilson Project Area.**  
**Shaded blocks are the time periods when activities are allowed. For details, see the appropriate Project Design Feature.**

RESTRICTIONS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Log hauling - paved roads												
Log hauling - gravel roads												
Log hauling - natural surface roads												
Tractor Yarding												
Cable yarding in CT												
Logging and road work within 1/4 mile of spotted owl sites												
Blasting without restrictions												
Falling and yarding in occupied talus in helicopter units												

This table is intended as an aid in summarizing seasonal restrictions. If there is a conflict between the table and the text, the text should be considered correct.

## Appendix B. Literature Cited

BLM Instruction Memorandum No. OR-98-097. Aug. 31, 1998. Survey and manage survey protocol - terrestrial mollusks (v. 2.0) draft document dated 10/29/97. 79p.

BLM Instruction Memorandum No. OR-99-26. Jan. 20, 1999. Survey protocols for survey and manage strategy 2 vascular plants (v. 2.0).

BLM Instruction Memorandum No. OR-2000-03. Oct. 15, 1999. Survey and manage management recommendations - terrestrial mollusks. Document dated 10/99.

BLM Instruction Memorandum No. OR-2000-004. Oct. 18, 1999. Survey protocols for amphibians (v. 3.0). Draft document dated 3/19/99. 165p.

BLM Instruction Memorandum No. OR-2000-017. Dec. 3, 1999. Survey and manage survey protocols - protection buffer bryophytes (v. 2.0).

BLM Instruction Memorandum No. OR-2000-018. Dec. 9, 1999. Survey protocol for seven survey and manage and protection buffer fungi (v. 1.3).

BLM Instruction Memorandum No. OR-2000-037. Feb. 18, 2000. Survey and manage protocol - Oregon red tree vole (*Arborimus longicaudus*) (v. 2.0). 32p.

BLM Instruction Memorandum No. OR-2000-086. Sep. 27, 2000. Management recommendations for the Oregon red tree vole (*Arborimus longicaudus*) (v. 2.0). 25p.

Castellano, M.A., and T. O'Dell. 1997. Management recommendations for survey and manage fungi (v. 2.0).

Chen, J. 1991. Edge effects: microclimatic pattern and biological responses in old-growth Douglas-fir forests. PhD Thesis, University of Washington.

Frest, T.J. and E.J. Johannes. 1993. Mollusc species of special concern within the range of the northern spotted owl. Unpublished manuscript. Deixis Consultants. Seattle, WA. 98 pp.

Huff, M.A., Holthausen, R.S., and Aubry, K.B. 1992. Habitat Management for Red Tree Voles in Douglas-Fir Forests. U.S. Forest Service General Technical Report PNW-GTR-302. 16 p.

Jules, E.S. 1997. Consequences of forest fragmentation for the understory plant, *Trillium ovatum* (Liliaceae). Pages 201-206 in T.N. Kaye, A. Liston, R.M. Love, D.L. Luoma, R.J. Meinke, M.V. Wilson, editors. Conservation and management of native plants and fungi. Native Plant Society of Oregon, Corvallis, OR.

Rodrigues, E. 1998. Edge effects on the regeneration of forest fragments in south Brazil. PhD Thesis, Harvard University.

Survey and Manage Amphibian Subgroup. 1995. Management recommendations for Survey and Manage salamanders in Pacific Northwest forests. Edited by D.H. Olson (subgroup lead). Draft document dated 06/09/95. 77 p.

USDA-FS, USDI-BLM. 1996. Draft Management Recommendations for Bryophytes. Installment 1.

**Appendix C. Potential timber harvest units, Mr. Wilson project area; Glendale Resource Area.**

Unit Number	Original Unit Designation	Acres (Est.)	MBF per acre	MBF	Stand Type	Recommendation and Rationale
1	32-9-3-1	11	10	110	CT	
2	32-9-4-7	11	12	132	LS	
3	32-9-4-13	57	12	684	Modified	
4	32-9-4-26	4	5	20	Modified	
5	32-9-4-27	15	5	75	Modified	
6	32-9-5-1	27	15	405	LS	
7	32-9-5-11	16	10	160	Modified	
	32-9-5-15	53	8	424	CT	Defer
	32-9-5-19	18	8	144	CT	Defer
8	32-9-5-20	6	12	72	LS	
	32-9-6-5A	8	20	160	LS	Defer - LS corridor
9	32-9-6-5B	27	8	216	Modified	
10	32-9-6-5C	12	8	96	Modified	
	32-9-6-16	37	15	555	LS/Mod	Defer - LS corridor
11	32-9-7-1	7	6	42	Modified	
	32-9-7-3	21	15	315	Mature	Defer - LS corridor
12	32-9-7-4A	23	15	345	Mature	
13	32-9-7-4B	6	8	48	Modified	
14	32-9-7-4C	7	8	56	Modified	
15	32-9-7-4D	5	8	40	Modified	
16	32-9-7-4E	10	8	80	Modified	
17	32-9-7-22	5	20	100	Mature	
18	32-9-7-24	24	18	432	CT	
	32-9-7-27	31	25	775	LS	Defer - LS corridor
19	32-9-8-1	7	12	84	CT	
20	32-9-8-6	68	70	4760	Mature	
21	32-9-8-9a	16	12	192	CT	Fertilization Research Plot
22	32-9-8-9b	13	12	156	CT	
23	32-9-8-24	35	25	875	Mature	

Unit Number	Original Unit Designation	Acres (Est.)	MBF per acre	MBF	Stand Type	Recommendation and Rationale
24	32-9-8-30	16	15	240	Modified	
25	32-9-9-16	45	25	1125	Modified	
26	32-9-9-33	33	15	495	Modified	
27	32-9-10-1	7	12	84	CT	
28	32-9-10-2	3	12	36	CT	
29	32-9-10-3	84	20	1680	CT	
	32-9-10-4	5	20	100	Mature	Defer - adjacent clearcut
30	32-9-16-2a	15	30	450	Modified	
31	32-9-16-2b	13	30	390	Modified	
32	32-9-16-7	15	40	600	LS	
33	32-9-16-8	58	50	2900	LS	
	32-10-1-27	7	20	140	Mature	Defer - LS corridor
	32-10-1-34A	21	20	420	Mature	Defer - LS corridor
	32-10-1-34B	18	20	360	Mature	Defer - LS corridor
	32-10-2-65A	7	10	70	Mature	Defer - LS corridor
	32-10-2-65B	10	10	100	Mature	Defer - LS corridor
	32-10-2-68	14	25	350	LS	Defer - LS corridor
	32-10-11-69	16	30	480	LS	Defer - LS corridor
	32-10-11-72	29	20	580	Mature	Defer - LS corridor
	32-10-12-3A	9	40	360	Mature	Defer - LS corridor
	32-10-12-3B	6	40	240	Mature	Defer - LS corridor
	32-10-12-7	10	10	100	Modified	Defer - LS corridor
	32-10-12-72	29	30	870	LS	Defer - LS corridor
	32-10-12-73	23	20	460	Mature	Defer - LS corridor
	32-10-12-74	63	4	252	Modified	Already in another timber sale
	32-10-12-77	40	15	600	Modified	Defer - LS corridor
	32-10-13-9	40	40	1600	LS	Defer - LS corridor
<b>Total for Project Area</b>		<b>1,205</b>		<b>26,525</b>		
<b>Total for Project Area</b>		<b>704</b>		<b>18,115</b>		

LS = Late-successional habitat

Modified = Past partial-cut

CT = Commercial Thin

**Appendix D. Plant sites within the Mr. Wilson Project Area**

<b>Species</b>	<b>Buffer size</b>	<b>Surveyed Unit*</b>	<b>Unit Acres</b>
<i>Plectania milleri</i>	100	01	8
<i>Cantharellus tubaeformis</i>	200	03A	9
<i>Bondarzewia mesenterica</i>	200	03C	25
<i>Cantharellus tubaeformis</i>	200	03C	25
<i>Plectania milleri</i>	200	05B	4
<i>Allotropa virgata</i>	0	17A	11
<i>Bondarzewia mesenterica</i>	200	18	10
<i>Buxbaumia viridis</i>	200	18	10
<i>Buxbaumia viridis</i>	200	20	28
<i>Phaeocollybia kaufmanii</i>	200	20	28
<i>Plectania milleri</i>	100	21	21
<i>Plectania milleri</i>	100	21	21
<i>Buxbaumia viridis</i>	200	24A	9
<i>Buxbaumia viridis</i>	200	24A	9
<i>Buxbaumia viridis</i>	200	24A	9
<i>Phaeocollybia californica</i>	200	24A	9
<i>Phaeocollybia dissiliens</i>	200	24A	9
<i>Phaeocollybia sipei</i>	200	24A	9
<i>Ramaria rubrievanescens</i>	200	24A	9
<i>Cantharellus tubaeformis</i>	100	27	4
<i>Buxbaumia viridis</i>	100	29B	34
<i>Phaeocollybia sipei</i>	100	29B	34
<i>Phaeocollybia sipei</i>	100	29B	34

Species	Buffer size	Surveyed Unit*	Unit Acres
<i>Plectania milleri</i>	100	29B	34
<i>Ramaria rubrievanescens</i>	100	29B	34
<i>Buxbaumia viridis</i>	100	29C	15
<i>Cantharellus tubaeformis</i>	100	29C	15
<i>Gyromitra esculenta</i>	0	29C	15
<i>Cantharellus tubaeformis</i>	100	Buffer	9
<i>Helvella compressa</i>	0	Buffer	9
<i>Phaeocollybia olivacea</i>	100	Buffer	22
<i>Phaeocollybia kaufmanii</i>	200		

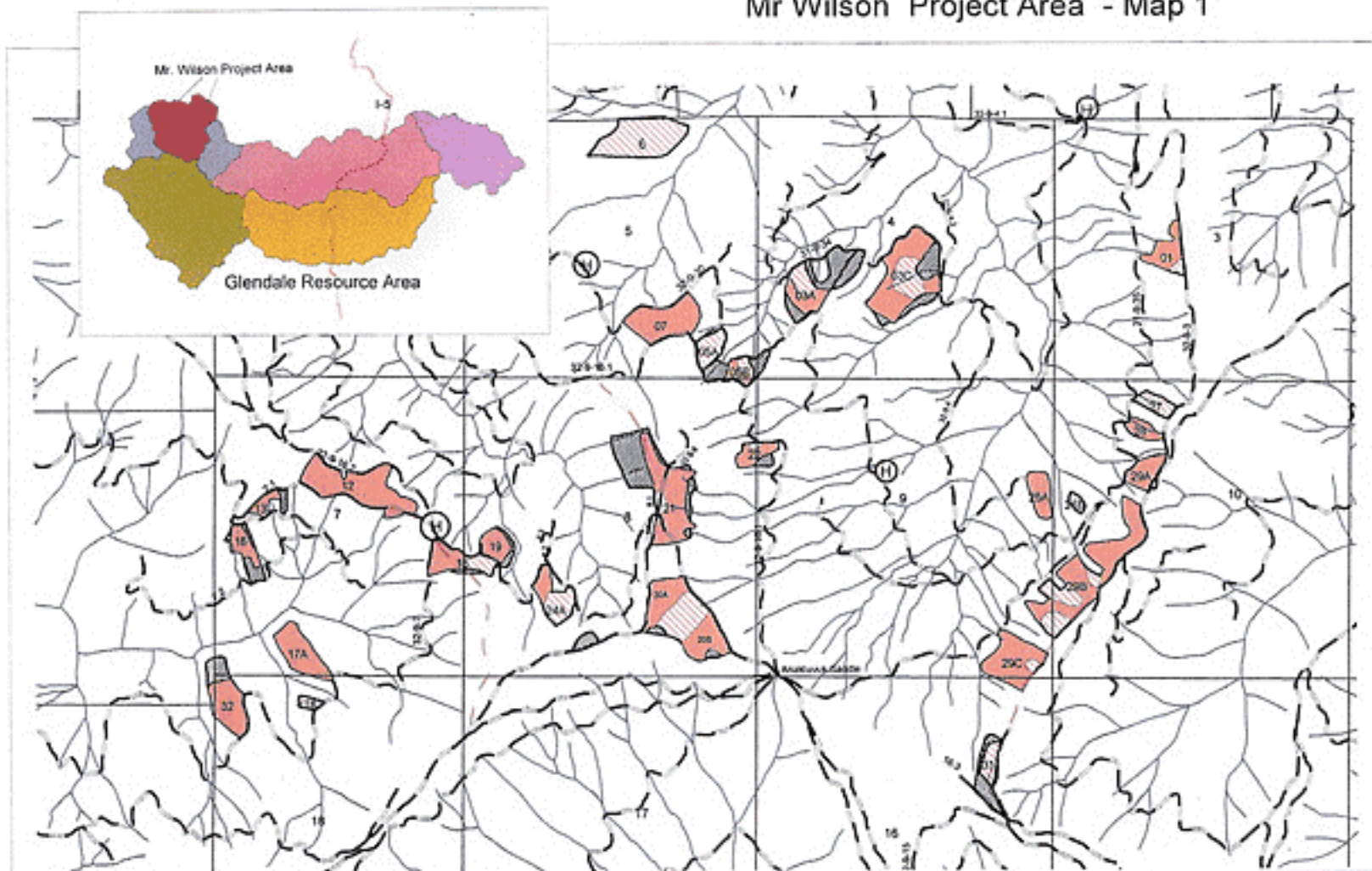
\* Some sites fell outside of final unit boundaries, but were within the original surveyed unit.

**Appendix E. Summary of Coarse Woody Material surveys for the Mr. Wilson Project Area.**

<b>Unit</b>	<b>Measure</b>	<b>Class 1 length, feet</b>	<b>Class 2 length, feet</b>	<b>Class 3 length, feet</b>	<b>Class 4 length, feet</b>	<b>Class 5 length, feet</b>
3A	length ft pcs / ac tons / ac	- - -	171 1.5 29.5	171 6.8 4.1	- - -	171 8.1 0.6
3B	length ft pcs / ac tons / ac	- - -	171 1.6 9.8	- - -	- - -	171 6.8 0.9
3C	length ft pcs / ac tons / ac	- - -	114 4.1 0.5	- - -	228.1(29.4) 2.7 13 (1.7)	570 10.1 5.3
5	length ft pcs / ac tons / ac	- - -	171 3.8 6.3	513 27 12.6	171 17 3.8	- - -
7	length ft pcs / ac tons / ac	- - -	342.1 11.1 12.7	684.2 (342) 24.3 (12.1) 47.2 (26.7)	- - -	- - -
12	length ft pcs / ac tons / ac	- - -	171 2.3 2.1	342.1 12.5 5.9	171 6.8 0.9	- - -
13	length ft pcs / ac tons / ac	- - -	- - -	1,026.3 50.2 36.4	- - -	- - -
16	length ft pcs / ac tons / ac	- - -	171 6.8 12.6	342.1 15.4 2.5	- - -	- - -
17A	length ft pcs / ac tons / ac	- - -	- - -	171 9.5 1.7	684.2 30 9.3	342 28.5 3.4
17B	length ft pcs / ac tons / ac	171 3.5 0.3	342 21.1 11.2	342.1 25.7 9.9	342 22.1 0.7	- - -

<b>Unit</b>	<b>Measure</b>	<b>Class 1 length, feet</b>	<b>Class 2 length, feet</b>	<b>Class 3 length, feet</b>	<b>Class 4 length, feet</b>	<b>Class 5 length, feet</b>
20	length ft pcs / ac tons / ac	114 1.9 0.2	114 1.2 5.3	114 5.2 7.8	- - -	684 38 4.4
24A	length ft pcs / ac tons / ac	171 12.2 1.4	171 2.2 6.3	513 18.9 9.7	171 5.7 0.6	171 4.5 0.2
24B	length ft pcs / ac tons / ac	171 6.3 0.7	171 7.4 1.1	171 3.8 2.9	1,197 90.7 16.3	342 18 3.8
31	length ft pcs / ac tons / ac	- - -	513 27 26.9	171 1.2 0.4	342.1 11.1 3.4	- - -
32	length ft pcs / ac tons / ac	- - -	171 2.6 8.6	- - -	1,026.4 44.7 21.6	684.2(139) 22.8 (4.7) 9.1 (2.0)

# Mr Wilson Project Area - Map 1



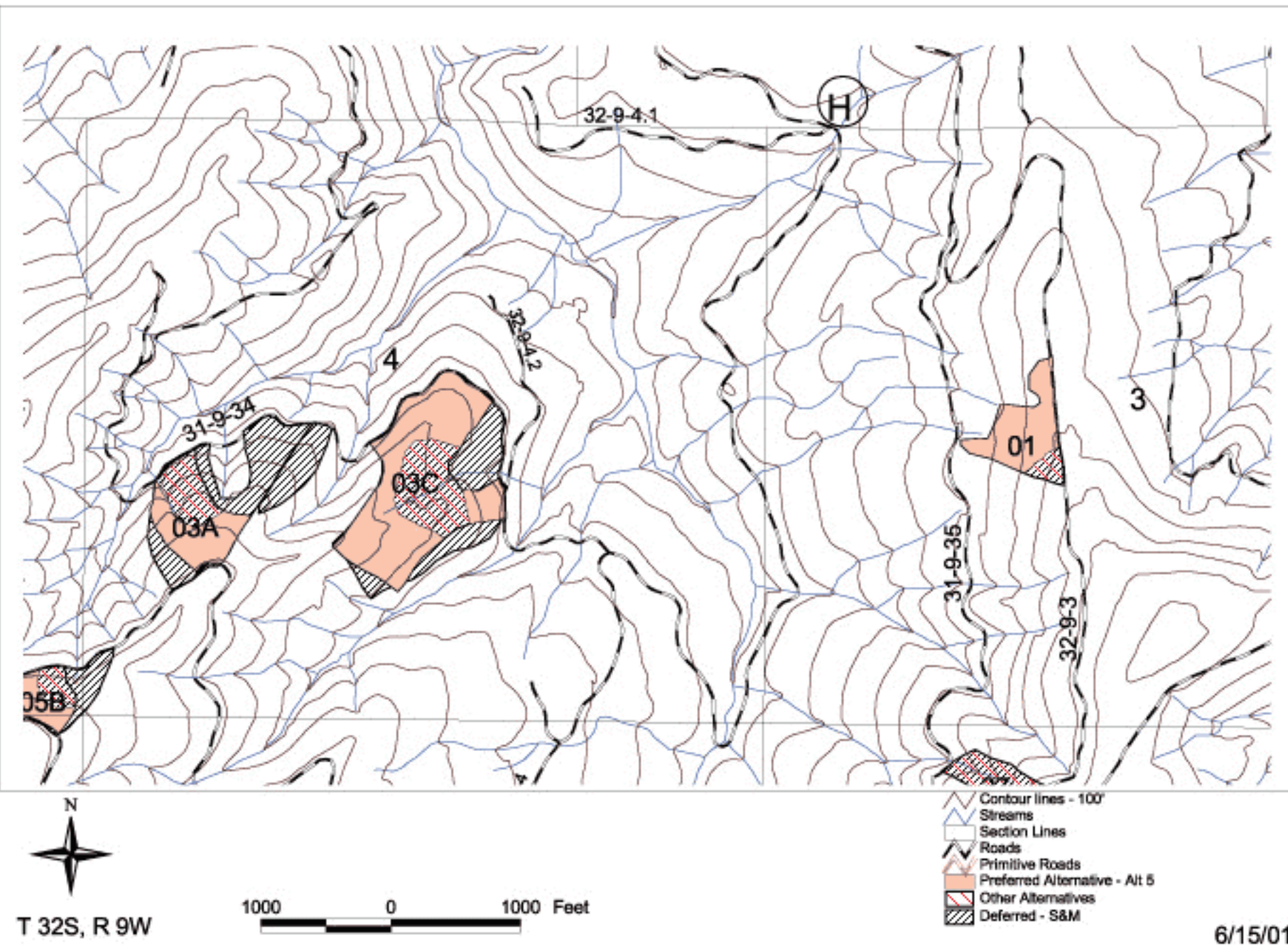
T 32S, R 9W

2000 0 2000 Feet

- Streams
- Section Lines
- Roads
- Primitive Roads
- Preferred Alternative - Alt 5
- Other Alternatives
- Deferred - S&M

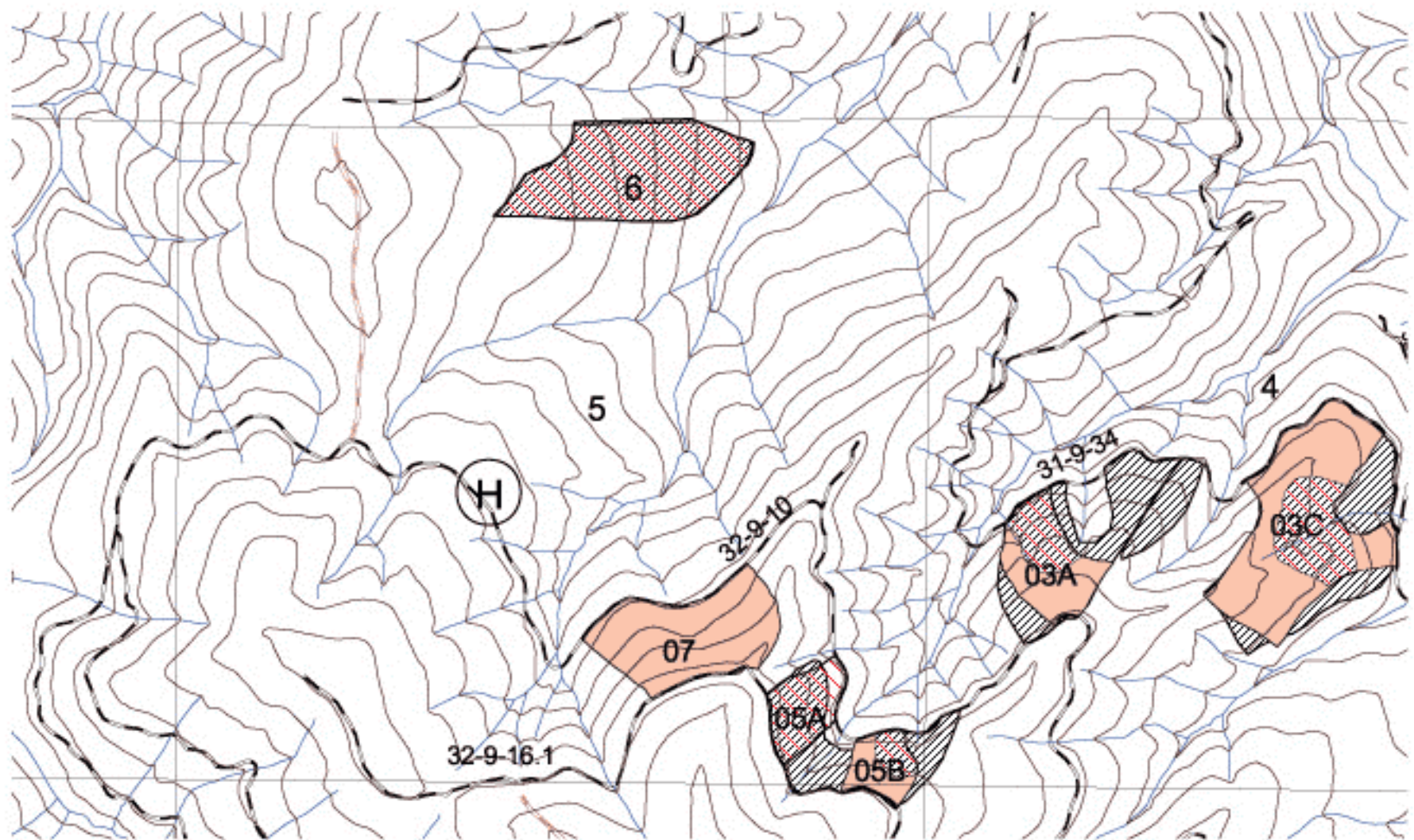
6/15/01

# Mr Wilson Project Area - Map 2



6/15/01

# Mr Wilson Project Area - Map 3



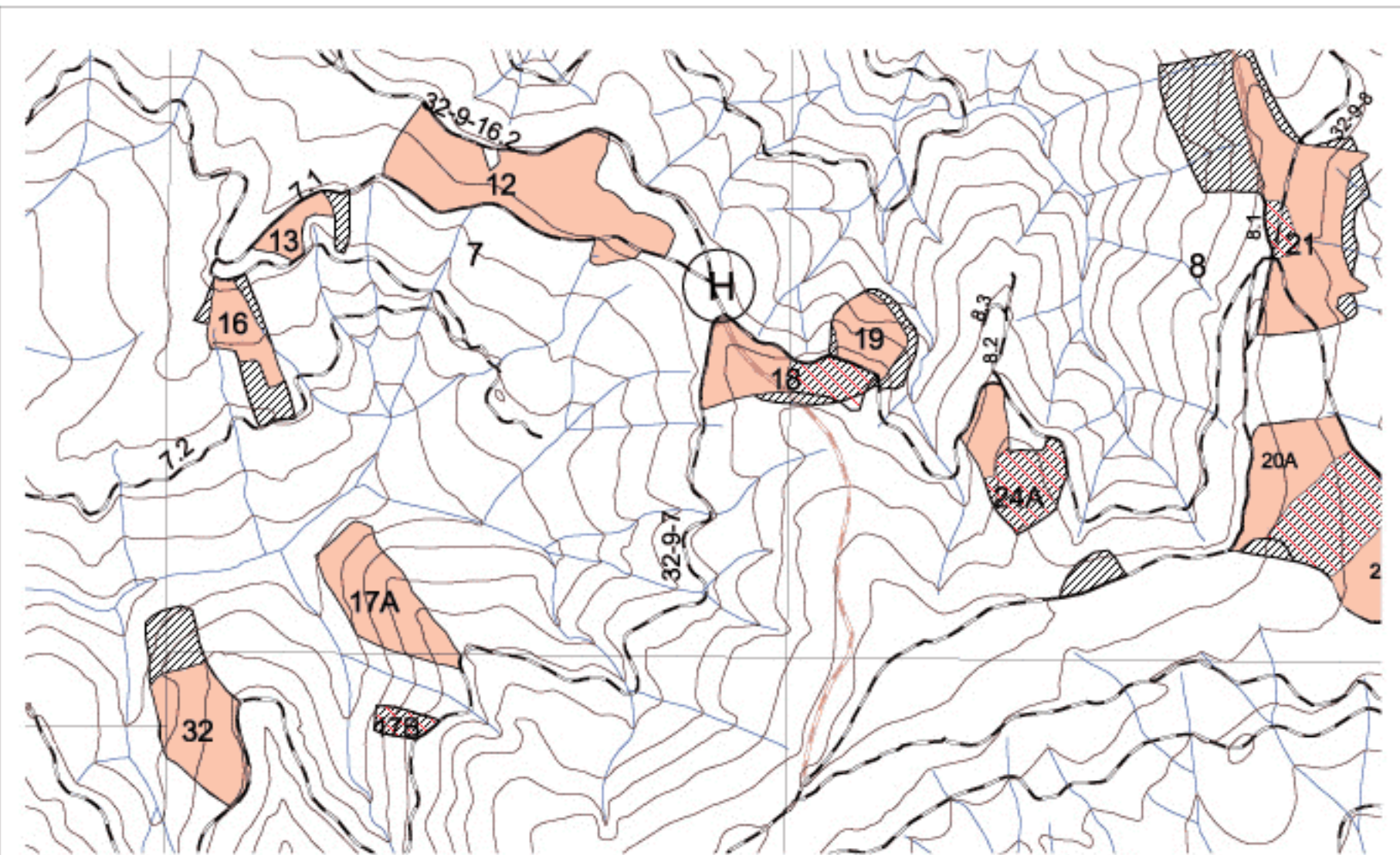
N  
T 32S, R 9W

1000 0 1000 Feet

- Contour lines - 100'
- Streams
- Section Lines
- Roads
- Primitive Roads
- Preferred Alternative - Alt 5
- Other Alternatives
- Deferred - S&M

6/15/01

# Mr Wilson Project Area - Map 4



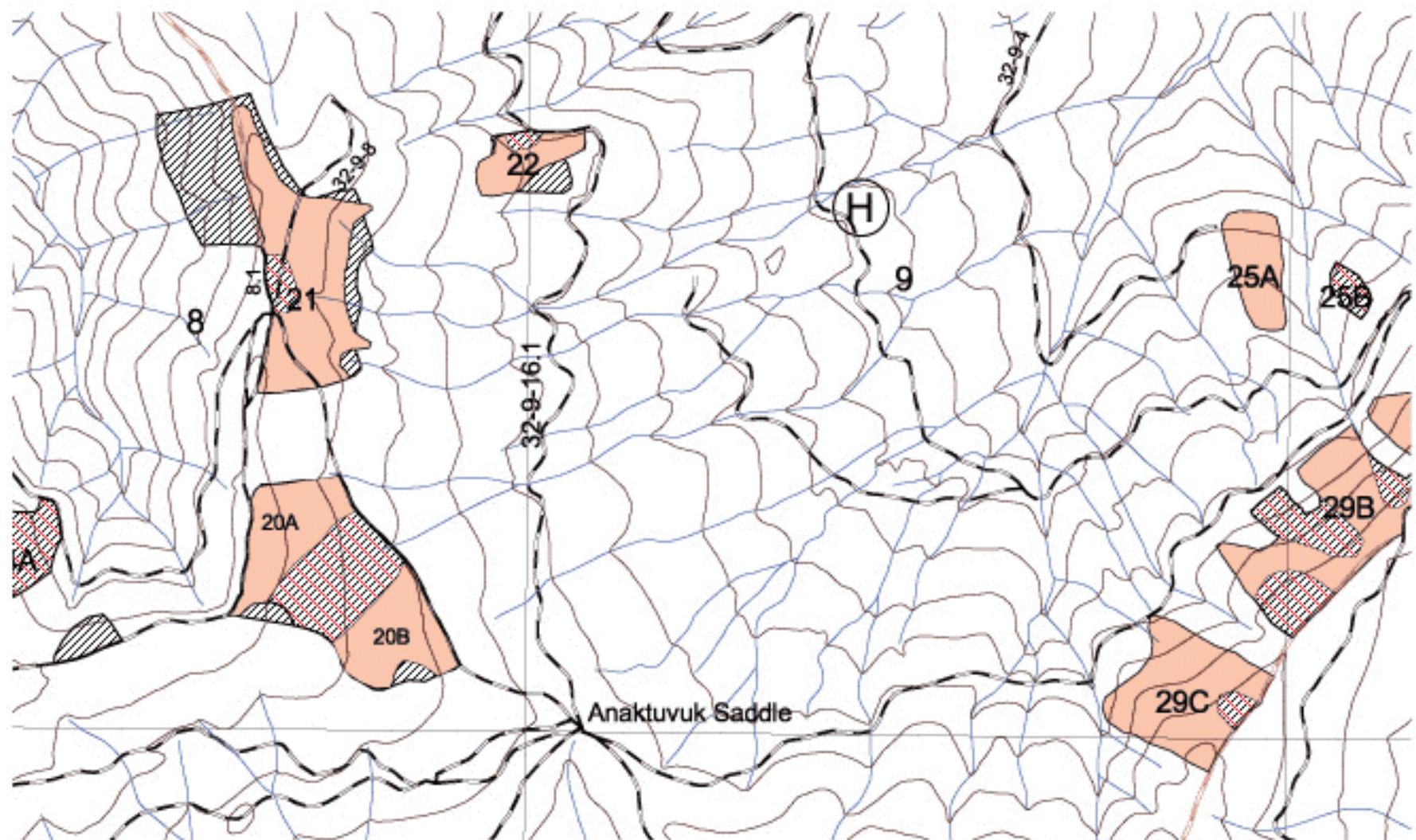
T 32S, R 9W

1000 0 1000 Feet

- Contour lines - 100'
- Streams
- Section Lines
- Roads
- Primitive Roads
- Preferred Alternative - Alt 5
- Other Alternatives
- Deferred - S&M

6/15/01

# Mr Wilson Project Area - Map 5



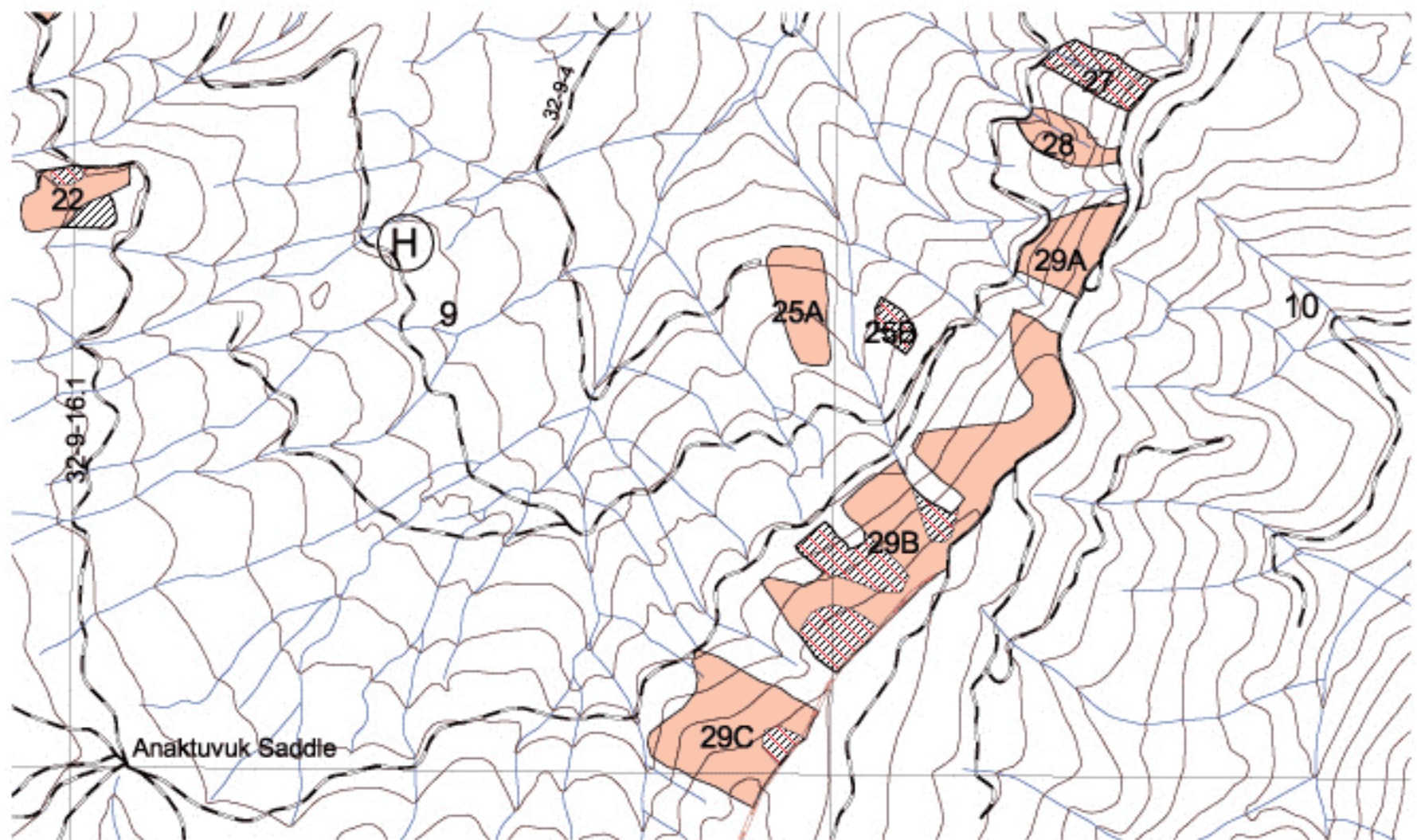
N  
T 32S, R 9W

1000 0 1000 Feet

- Contour lines - 100'
- Streams
- Section Lines
- Roads
- Primitive Roads
- Preferred Alternative - Alt 5
- Other Alternatives
- Deferred - S&M

6/15/01

# Mr Wilson Project Area - Map 6



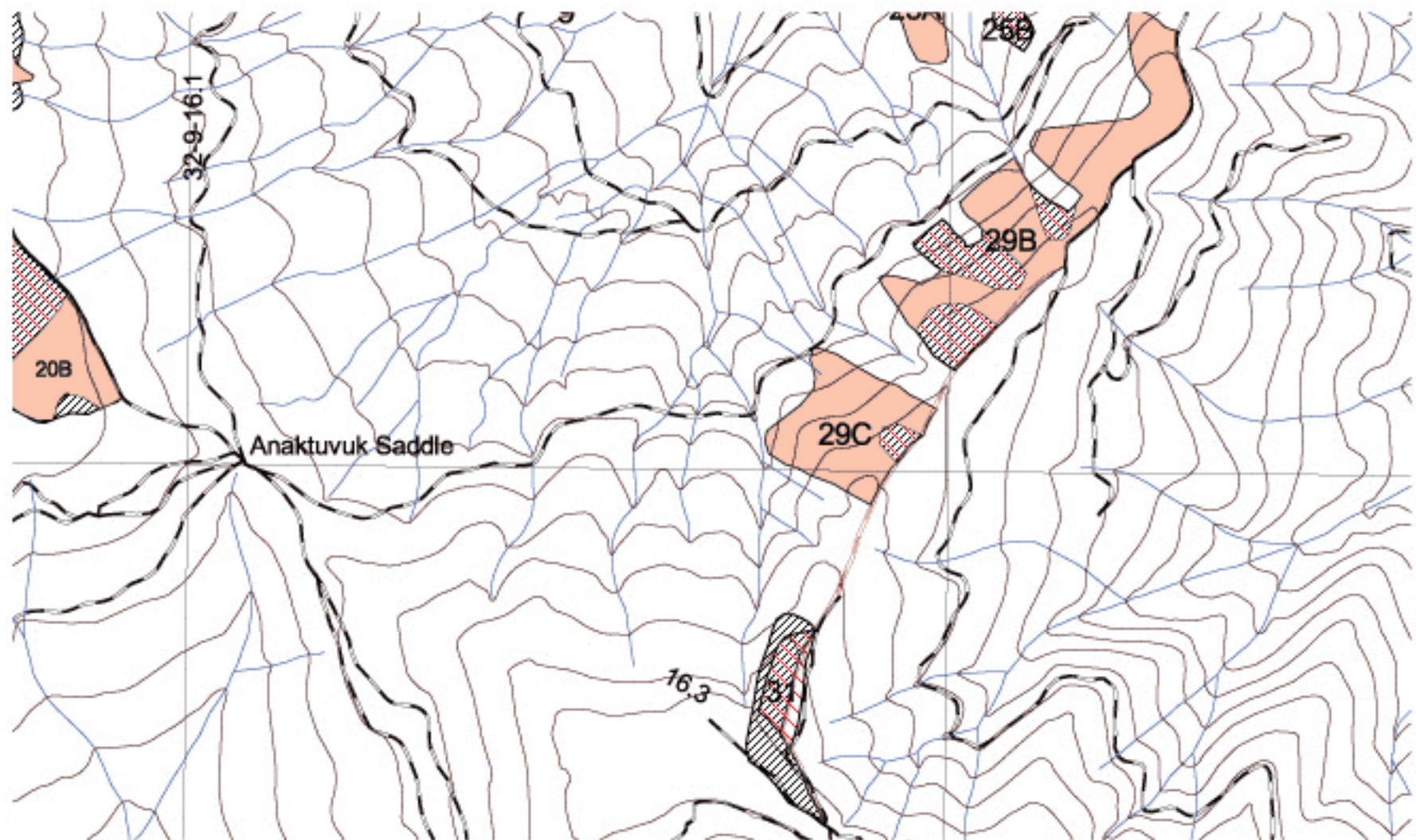
1000 0 1000 Feet

T 32S, R 9W

- Contour lines - 100'
- Streams
- Section Lines
- Roads
- Primitive Roads
- Preferred Alternative - Alt 5
- Other Alternatives
- Deferred - S&M

6/15/01

# Mr Wilson Project Area - Map 7



T 32S, R 9W

1000 0 1000 Feet

- Contour lines - 100'
- Streams
- Section Lines
- Roads
- Primitive Roads
- Preferred Alternative - Alt 5
- Other Alternatives
- Deferred - S&M

6/15/01